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The Uses and Limitations of Citizen Science for Monitoring the Australian Grey Nurse Shark (Carcharias taurus) Population

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SIT Study Abroad

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Abstract

iNaturalist is a citizen science photographic database, which is an underutilized resource in photographic identification research studies. Grey nurse sharks are critically endangered and there is a lack of knowledge regarding the estimated population size, longevity, and interactions with fisheries of this species off the coasts of Australia. To determine how photos submitted to iNaturalist can be used in *Carcharias taurus* conservation, the photographs were evaluated on a number of criteria including: location, date, visibility of spot patterns, visible sex characteristics, and visible injuries. In total, 814 photographs of grey nurse sharks were obtained from the iNaturalist database. Only 23.2% of the photographs in iNaturalist met the standards necessary for Sharkbook.ai, but 35.6% were clear enough shots to provide valuable information for locational, seasonal, and/or injury-based research. The most prominent injuries were scars, with retained fishing gear a close second. The temporal data was only reliable in the contemporary iNaturalist submissions—the archival photographs were not accurately time-stamped and therefore were not included in seasonal assessments. The seasonal patterns shown by the contemporary iNaturalist encounter dates are supported by known migratory patterns of grey nurse sharks. The detection hotspots were primarily in the southern portion of the eastern range, with significantly fewer encounters reported in Western Australia. iNaturalist is a valuable general resource for Grey Nurse Shark research but lacks the expertise and knowledge necessary from contributors to fully meet the needs of complex research objectives.

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Acknowledgments

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1.0 Introduction

Citizen science is the collection of data by members of the general public and is a growing resource for the tracking and counting of faunal populations (Araújo et al., 2022; New South Wales Department of Planning and Environment, 2022). Sites such as iNaturalist, Reef Watch, Moths and Butterflies Australasia, and many others provide a platform for members of the general public to contribute to data collection across many scientific disciplines. Photographic identification is a growing method of study in biology and ecology, as it provides a noninvasive opportunity to understand species' population status and threats (Araújo et al., 2022; Pierce et al., 2018). Photographic identification can be used on a variety of species, so long as individuals possess unique and recognizable markings and characteristics, such as whale sharks, lizards, and zebras.

iNaturalist and other platforms are making photographic identification and citizen science contributions much more viable and widespread research resources through the development and improvements of AI technologies. With the improvement of AI technology, resighting of individuals in photographic identification can be more accurately done by an algorithm in addition to visual matching. Additionally, AI technologies are becoming more accurate in identifying individuals at a species level, which improves the quality of contributions to citizen science databases and supports identifications made by the general public.

iNaturalist is a citizen science organization based on peer-reviewed identification of submitted photographs (Loarie, 2022). Citizen science contributions to photographic identification studies can be valuable depending on the quality of the available photographs and supplemental information (Araújo et al., 2022).

1.1 Brief Background on *Carcharias taurus*

Carcharias taurus, also known as Grey Nurse Sharks, Sand Tiger Sharks, or Spotted Ragged-tooth Sharks, are found in temperate and tropical waters along continental shelves worldwide (Heathcote, 2021; Bradford et al., 2018). They live in the North and South Atlantic Oceans, and the Indian and Western Pacific Oceans (Bradford et al., 2018). The East Australian population of *C. taurus*, as a result of their threatening appearance, was hunted significantly in the 20th century (Heathcote, 2021). Eventually, *C. taurus* became the first species to be protected in New South Wales by an act of the Australian parliament in 1984 (Heathcote, 2021). They are relatively harmless to humans unless provoked, and eat small animals such as fish, squid, and crustaceans (Heathcote, 2021).

C. taurus participate in intrauterine cannibalism, meaning that pups consume their weaker litter mates after they hatch but before live birth (Hoschke & Whisson, 2016; Heathcote, 2021). *C. taurus* reach maturity at 4-6 years for males and 6-8 years for females and have two uteri (Australian Government: Department of Climate Change, Energy, the Environment, and Water, 2021). females only give birth to two pups every 2-3 years (Hoschke & Whisson, 2016; Heathcote, 2021). These physiological quirks are a major factor in their struggle to recover their population size in the aftermath of hunting and netting incidents (Australian Government: Department of Climate Change, Energy, the Environment, and Water, 2021; Dwyer et al., 2023).

In Australia, *C. taurus* can be found in two distinct populations, one along the western coast and the other along the eastern coast (Bradford et al., 2018). The East Australian *C. taurus* population is the smallest of the two Australian *C. taurus* populations (Stow et al., 2006). The East Coast population can be found from the southern coast of New South Wales to the southern coast of Queensland (QLD) (Figure 1). The only known aggregation site for pregnant female *C.*

taurus on the East Coast is at Wolf Rock, QLD, with a transitory aggregation site just south at North Stradbroke Island, QLD (Dwyer et al., 2023).

Figure 1. Map of the Eastern Australian Grey Nurse Shark habitat range. Adapted from Australian Government: Department of Climate Change, Energy, the Environment, and Water, 2009.

C. taurus was assessed for the *IUCN Red List of Threatened Species* and classified as critically endangered as of 2020 (Simpfendorfer, 2020). Due to genetic isolation from the Western Australian and South African populations and sequential founder effects, the Eastern Australian population of *C. taurus* has the lowest genetic variation out of all global populations (Stow et al., 2006). This population has been declining for years as a result of human interaction (hunting, fishing, and accidental catches in beach netting) and has yet to show significant signs of recovery (Australian Government: Department of Climate Change, Energy, the Environment, and Water, 2021; Dwyer et al., 2023).

Despite being a protected species, there is much unknown about the East Australian population of *C. taurus.* Since there is no contemporary estimate of population size, researchers

are unaware of how the species has recovered since the implementation of its protected status. There is little information about how fishery threats to the eastern population have changed over time. The ability of *C. taurus* to recover from injuries and retained fishing gear is unknown, and the natural longevity of the species in the wild remains understudied.

1.2 *Carcharias taurus* and Photographic Identification

C. taurus is a good model species for citizen science contributions, as they are notably peaceful and not dangerous to divers, live in easily accessible coastal waters, have high fidelity to their aggregation sites, and are individually identifiable by their spot patterns (Van Tienhoven et al., 2007). Individuals of *C. taurus* can be identified through the unique spot patterns and scarring on the flank of the sharks (Bansemer & Bennett 2010).

Photographic identification has previously been used in *C. taurus* research by means of systematic surveys to estimate population size and track the frequency of fishing gear-related injuries (Bansemer & Bennett 2008; Bansemer & Bennett 2010). A large-scale photographic identification project of *C. taurus* has not yet been completed due to many restricting factors, including cost, range, and time demands. To collect the necessary data for a researcher-led photographic identification project, researchers would need to be diving and photographing individuals in the multiple hotspot locations in which *C. taurus* is commonly found over a long period of time. There would also need to be one or more researchers with the time and expertise to evaluate the photographs and the data either manually or by submitting them to an online database.

There are multiple citizen science initiatives dedicated to expanding knowledge of *C. taurus* population size, recovery, longevity, and movements in Australia, including but not

limited to the Grey Nurse Shark Watch on iNaturalist and the Grey Nurse Shark Watch project run by Reef Check Australia in Brisbane, QLD.

1.5 Aim of Study

The aim of this study is to assess the extent of iNaturalist as a resource for *C. taurus* conservation in identification on a species level, rephotographing of individuals, spatial accuracy, and seasonal patterns. A greater understanding of the population size and demographics of the Eastern Australian *C. taurus* population would allow scientists to evaluate the efficacy of current protective measures and continue monitoring the population and its recovery. Understanding the uses and limitations of iNaturalist in *C. taurus* research can help highlight the best use of iNaturalist data in both shark science and conservation and other disciplines in biology and life science. Determining the strengths and weaknesses of specific citizen science platforms will allow targeted and efficient use of data collected and contributed by the general public in many future scientific endeavors.

2.0 Methods

2.1 Data Collection

A search was done on iNaturalist for *C. taurus* and narrowed down to observations centered around Australia. The photographs classified as research grade observations—meaning they were positively identified as a Grey Nurse Shark by multiple iNaturalist users and contain a photograph, date, and location—were added to the Grey Nurse Shark Watch project on iNaturalist. This Australian subsample was then sorted through to evaluate the extent of its usefulness in Australian research on *C. taurus*.

To determine how useful "citizen science" contributions to iNaturalist are to photographic identification of Australian grey nurse sharks, encounters on iNaturalist were evaluated in five categories: (1) if they are viable for identification on Sharkbook.ai, (2) if they had visible injuries, (3) if their sex was determinable, (4) where the photo was taken, and (5) when the photo was taken. For the photos classified as "viable", the Sharkbook.ai algorithm requires three points of reference: the beginning of the first dorsal fin, the pelvic fin, and the beginning of the second dorsal fin (Figure 2). If a photograph from iNaturalist did not clearly show these three points of reference from a side-facing right angle, it was determined as non-identifiable and was excluded from individual identification analysis on Sharkbook.ai. Evaluation of photographs additionally considered the clarity of the photograph and visibility of recognizable injuries.

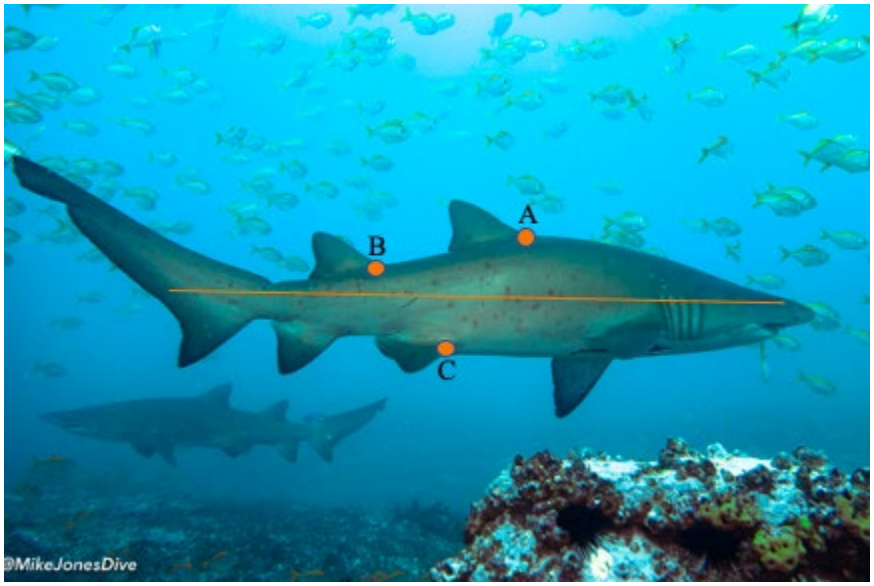

Figure 2. An example of optimal shark positioning in a photo for spot mapping by the algorithm used by Sharkbook.ai, with the flank perpendicular to the camera and the starts of the (A) first dorsal fin, the (B) second dorsal fin, and the (C) pelvic fin clearly visible. Photo by iNaturalist user @MikeJonesDive, taken on 28 February 2021, at Long Reef Headlands, NSW.

2.2 Data Analysis

The proportion of usable iNaturalist photographs by Sharkbook.ai standards was calculated, as well as the proportion of injured sharks photographed. The types of injuries were recorded, as well as the proportion of each injury type out of the total injury count. The temporal data of three locations—Manly, NSW, Broughton Island, NSW, and North Stradbroke Island, QLD—was compared with preexisting literature and knowledge of aggregation sites and times to determine the accuracy of the iNaturalist encounter dates. Seasonal data was collected for these three locations and examined to determine if there were any patterns in the number of *C. taurus* photographed in those locations based on the time of year. Seasons were defined as follows: Summer was December-February, Autumn was March-May, Winter was June-August, and Spring was September-November.

3.0 Results

3.1 Time and Space

A total of 814 photographs were taken over 39 years, with 27 of those years actually having photographs taken within that year. The distribution of submissions in the Grey Nurse Shark Watch project on iNaturalist demonstrates an upward trend from the late 2000s and early 2010s going into the 2020s. The earliest dated photograph was from 1984, with another large group of submissions in 1986 (Figure 3).

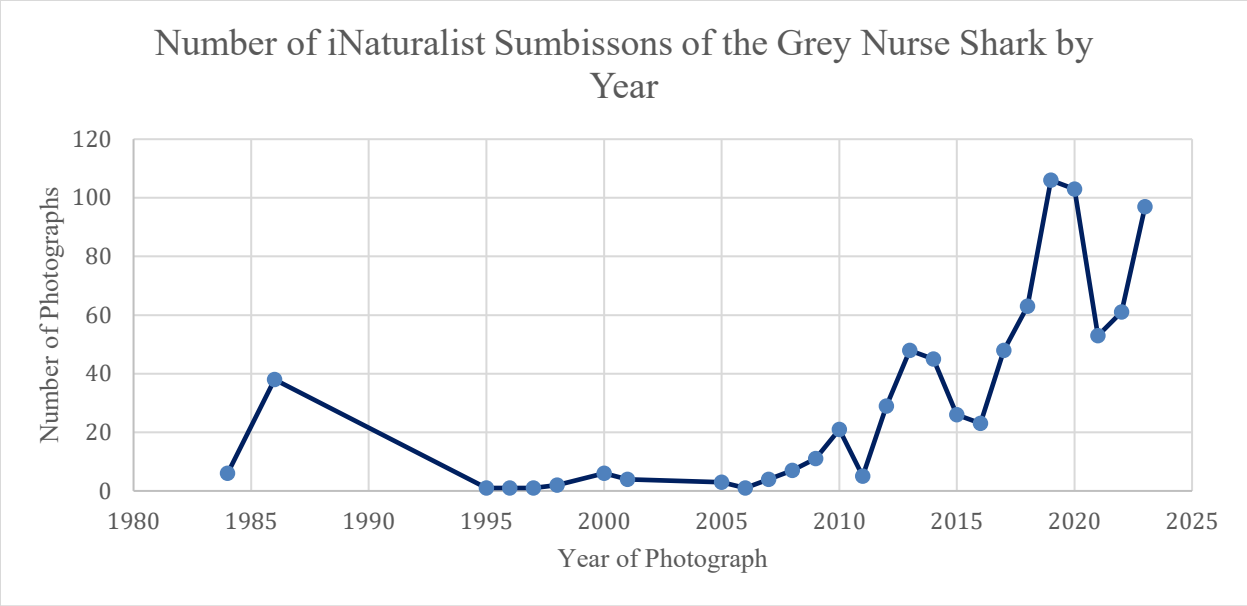

Figure 3. The number of photographs of identified C. taurus in Australia by year, from 1984 to 2023.

The majority of the photographs of *C. taurus* submitted to iNaturalist in Australia were from the East Coast, with only 29 (3.6%) being tagged as from the West Coast. There is a higher density of photographs taken on the central coast of New South Wales as opposed to the coast of South Queensland and South New South Wales (Figure 4). There is a small hotspot on the southern Queensland coast around North Stradbroke Island and Moreton Bay.

Figure 4. The spatial distribution of photographs of C. taurus in Australia submitted to iNaturalist as of 5 November 2023.

785 (96%) of the photographs of *C. taurus* taken and submitted to iNaturalist between 1984 and 5 November 2023 were from the East Coast. There is a strong suggestion of site fidelity to the locations *C. taurus* were most commonly photographed at. Seal Rocks, NSW, Manly, NSW, Broughton Island, NSW, North Stradbroke Island, QLD, Magic Point, NSW, and Bushranger's Bay, NSW were some of the most commonly reported sites on iNaturalist.

The month with the highest number of photographed encounters across Manly, NSW, Broughton Island, NSW, and North Stradbroke Island, QLD, was August (Figure 5). The majority of encounters photographed in Broughton Island, NSW, were photographed in autumn (Figure 5B).

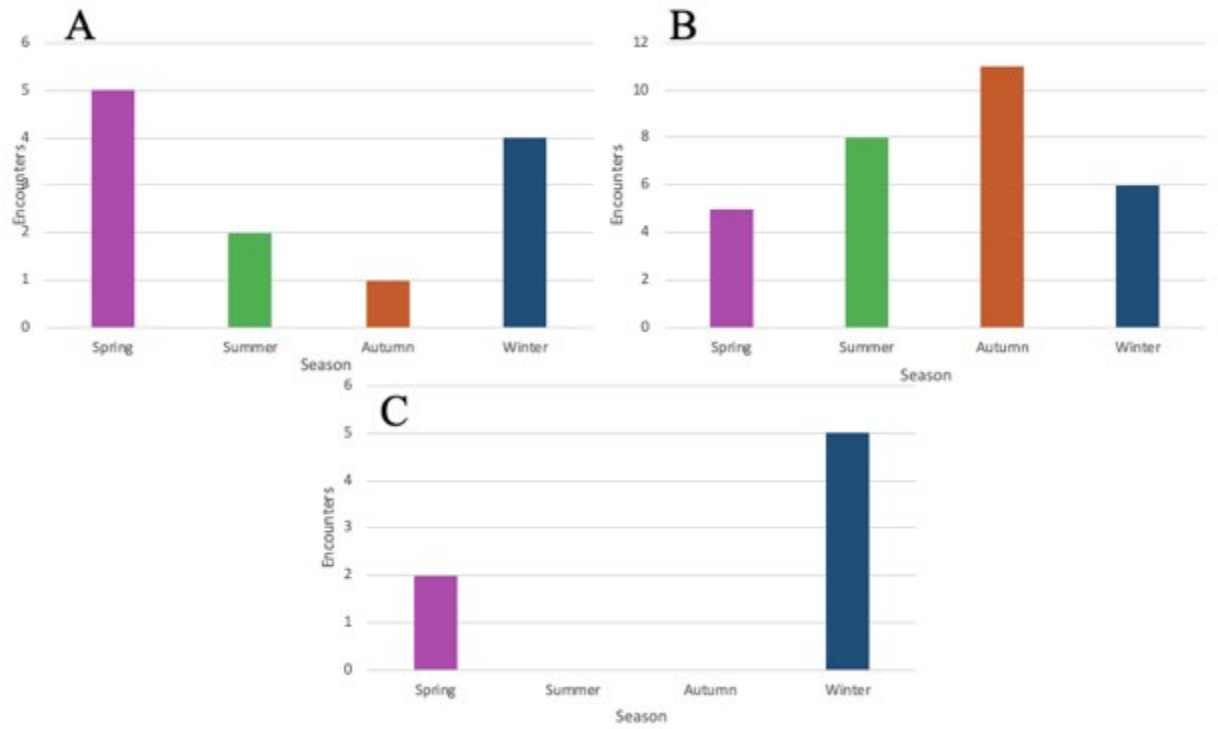

Figure 5. (A) The number of photographs of C. taurus per season in Manly, NSW. (B) The number of photographs of C. taurus season in Broughton Island, NSW. (C) The number of photographs of C. taurus season in North Stradbroke Island, QLD.

3.2 Identifiable Characteristics

406 sharks photographed on iNaturalist were not photographed in a way that allowed for a confident determination of their sex. More females were determined due to visible mating scars or a clear view of the pelvic fins than mature males with visible claspers, but there were overall more undetermined sharks than either male or female, and almost more sharks of undetermined sex than both male and female combined.

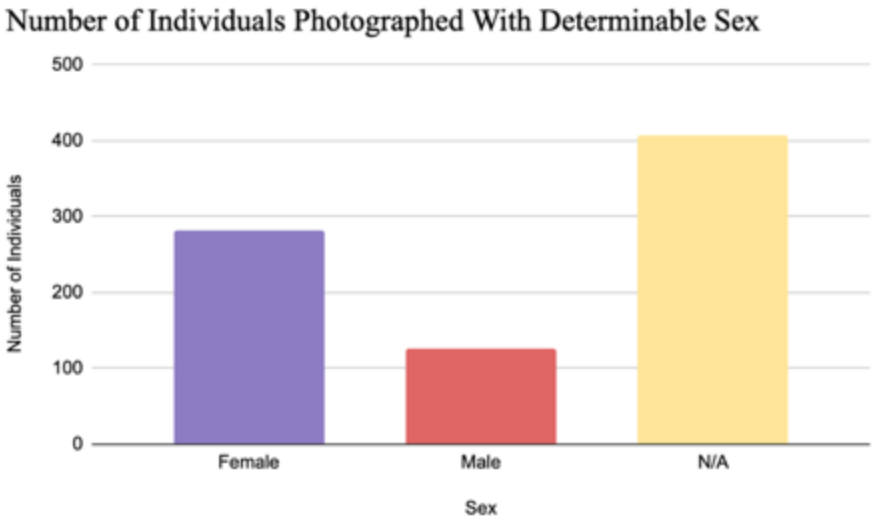

Figure 6. The number of C. taurus in Australia photographed on the iNaturalist database with visible sex characteristics.

Out of 814 photographs of *C. taurus* on iNaturalist, 290 (35.6%) had clearly visible and identifiable sharks, and 189 (23.3%) met the criteria for the Sharkbook.ai spot mapping algorithm. Of the 814 photographs, 127 (15.1%) sharks had visible injuries. These injuries were divided into 4 categories: retained fishing gear, scar, dead, and fin damage (Figure 7). As the cause of death was not determinable for deceased sharks in this dataset, they were put into a single category.

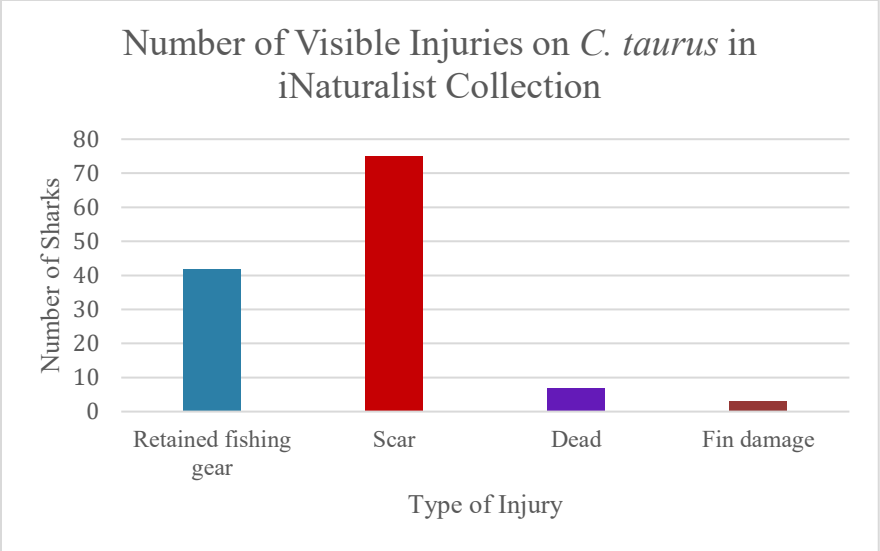

Figure 7. The number of injuries on C. taurus in Australia recorded from iNaturalist by type of injury.

An individual shark photographed in Manly, New South Wales, on 21 January 2022 was matched by visual spot-matching in the same location 4 months later on 29 May 2022 (Figure 8). This shark was visually matched by recognizing the spot patterns on one photograph and matching the corresponding spot on the alternate photograph with a red mark.

The individual in Figure 8 was not matched by the Sharkbook.ai algorithm scanTask for spot mapping despite both photo A and photo B being submitted to the site and entered into the spot-mapping program.

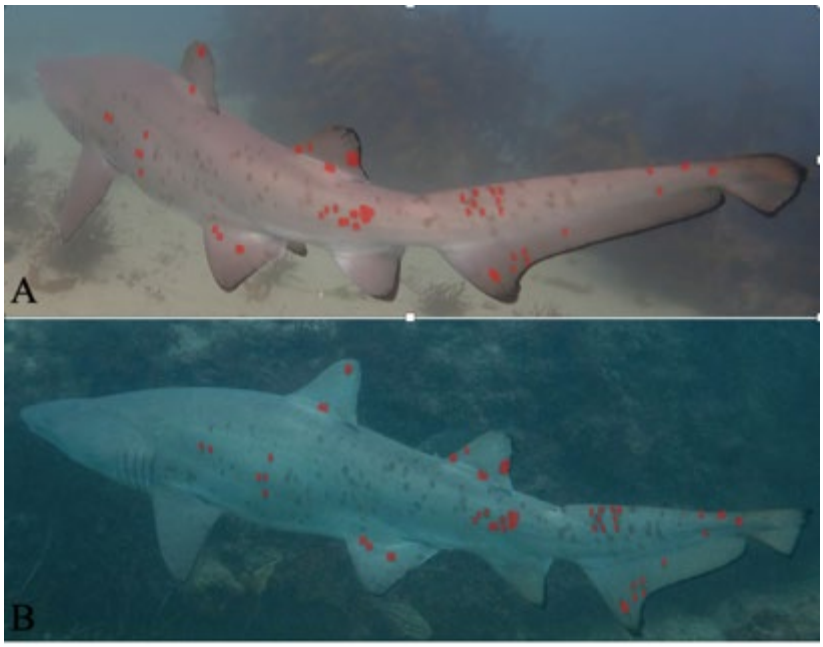

Figure 8. The red markers highlight the matched spots on the left sides of the sharks. These photos were matched as the same individual through visual identification.

(A) Photo of a juvenile C. taurus by iNaturalist user @buggersofoz taken on 29 May, 2022, at Manly, NSW, AU. The Sharkbook.ai encounter ID is 643c2d6a-d91d-4218-8401-ca189b7cfe5c.

(B) Photo of a juvenile C. taurus by iNaturalist user @biniek-io on 21 January, 2022, at Manly, NSW, AU. The Sharkbook.ai encounter ID is ac64d8aa-1995-4df5-8b66-614bda882412.

4.0 Discussion

Evaluating the extent to which iNaturalist can be used as a citizen science resource in *C. taurus* research and conservation supports the application of citizen contributions in science in the most efficient manner. Determining which facets of *C. taurus* research benefit from data submitted to citizen science platforms allows researchers to analyze and interpret the most useful and accurate contributions of citizen science and direct fieldwork to areas in which citizen science is more limited.

Site fidelity was very strongly supported by the iNaturalist photographs. Injury tracking through photographic identification is possible with photographs in the iNaturalist collection, as is the resighting of individuals. Seasonal movements can be tracked through photographs submitted to iNaturalist, but archival photographs uploaded from before the launch of the iNaturalist site are not as reliable as photographs taken since 2011 (Loarie, 2023).

4.1 External Injuries

External injuries, such as damage to dorsal fins, scars, or retained fishing gear, provide important information in detecting trends in location and injuries incurred by grey nurse sharks. More than a third of sharks photographed on iNaturalist had visible injuries. This statistic is similar to the 29% of female sharks found on the East Coast between 2006 and 2008 with fishing-related injuries in a 2010 study, but not to their findings that 52% of males had fishing-related injuries (Bansemer & Bennett). The majority of sharks with visible injuries on iNaturalist—fishing-related or otherwise—did not have visible claspers, conflicting with Bansermer and Bennett's findings that more males sustained injuries from interactions with fishing gear (2010). This disparity may be due to the difficulty of distinguishing female sharks from juvenile males without clear views of the dorsal fins; the majority of sharks with visible injuries did not have visible enough sex characteristics to be confidently recorded.

Interestingly, none of the dead sharks photographed and included in the iNaturalist database had major fin damage, but that may be a result of the small percentage of dead sharks photographed overall. Only 0.85% of the total photographs submitted to the Grey Nurse Shark Watch project on iNaturalist were photographs of dead sharks.

4.2 Seasonal Trends

The majority of the photographs submitted to iNaturalist were from popular dive spots in New South Wales, Australia, or South Queensland, Australia. The number of photographs per site may be more due to the number of divers visiting those sites, and the same contributors submitting photographs at their frequented spots. That being said, the locations in New South Wales show an anticipated year-round presence of *C. taurus*, since those southern waters are well within their eastern range (Australian Government: Department of Climate Change, Energy, the Environment, and Water, 2009). The seasonal trends shown at North Stradbroke Island (Figure 5:C) match the expected seasonal trends with the waters surrounding North Stradbroke Island and Moreton Island being key aggregation sites for mature C. taurus during the Austral winter (Dwyer et al. 2023). This geographic and seasonal data is helpful in understanding the constraints of citizen science contributions to population monitoring research. The temporal data from the submissions at North Stradbroke Island is supported by known aggregation times and *Carcharias taurus* movement ecology (Dwyer et al., 2023). This accuracy in the dates attached to these particular submissions allows researchers to confidently examine the temporal data and take into consideration the photographed encounter in June, which is at the early end of aggregation season. Further photographing of *C. taurus* during winter months at this East Coast aggregation site could provide information to support the existing understanding of mating season for this species or could support the expansion of the timeframe for when *C. taurus* gather around North Stradbroke Island and Wolf Rock to mate.

4.3 Long-Term Study

As the majority of the photographs were taken in the same popular locations, there is a good chance of the rephotographing of individuals. As demonstrated by the individual rephotographed in Figure 8, sharks that remain in or return to the same location have a chance of being resighted. Since the 814 photographs in the Grey Nurse Shark Watch project were submitted by 168 observers, it is likely that the photographers will be returning to the same dive sites and continuing to submit photographs to be identified on iNaturalist. Despite only 23.2% of the photographs being of a good enough quality and angle to be submitted to Sharkbook.ai, more were visible enough to be recognized as rephotographed sharks (see: Shark A in Figure 8). Additionally, photographing in the same regions is a good method to track the type and frequency of injuries.

The long-term nature of a study using iNaturalist photographs allows for continued monitoring of popular locations for *C. taurus* at a low cost. The number of individuals photographed with visible injuries can continue to be recorded and any changes in the proportion of sharks with visible fishing-related injuries can be observed.

4.4 Limitations and Future Work

The temporal data for photographs taken before the launch of iNaturalist in 2011 is less reliable. All of the photographs submitted to iNaturalist and included in the Grey Nurse Shark Watch project from 1984-1986 were from a single account associated with the project In Bygone Dives project, which uploaded archival underwater photos for non-iNaturalist users. The photographs from this account were submitted in batches at the same date and time as the other photographs in their batch. All the photographs from 1984 were recorded as observed on 1 June

1984, at 11:33 AM and all the photographs from 1986 were observed on 9 May 1986 at 10:58 AM. These photographs could not feasibly have been taken at the exact same time, suggesting that the accuracy of their recorded day and month could be unreliable. The older photographs that were taken before the launch of iNaturalist are valuable in terms of location data, possible rephotographing of individuals, and possible abundance data, but not for seasonal trends and evaluations.

The algorithm used by Sharkbook.ai is a useful tool in spot-mapping for many species of shark, including *C. taurus*, but the strict positioning requirements for the algorithm to work limits the proportion of photographs that are usable that were not taken without these specific requirements in mind. The individual in Figure 8 was not matched to itself by the Sharkbook.ai spot-mapping algorithm due to the angled position of the body in photo A. A limited number of photographs in the iNaturalist collection were suitable for Sharkbook.ai due to clarity and angle, but Sharkbook.ai is not the only valuable use for these photographs. The identification of individuals and the algorithm matching for resighted sharks provide important information in *C. taurus* studies, but spatial and temporal data can easily be gained from the iNaturalist submissions without meeting the necessary parameters for the Sharkbook.ai algorithm.

While only one shark was recognized as a resighted individual during the course of this study, that is less due to a lack of resighted individuals and more a lack of focus on visually matching sharks within the iNaturalist collection. The 189 photographs uploaded to Sharkbook.ai were entered into the scanTask AI matching system for spot-matching. Those results were not reviewed in this evaluation due to time constraints and will be examined in the future.

5.0 Conclusion

5.1 *Carcharias taurus* and Citizen Science

iNaturalist is a valuable resource in monitoring the East Australian population of *C. taurus* in a variety of ways. A useful number of photographs were found to be the correct quality and angle to be submitted to Sharkbook.ai for algorithm-based spot-matching. The many photographs, not suitable for this algorithm, still provide useful information about the number and type of injuries visible on photographed sharks and the seasonal presence of sharks at popular dive sites and the known eastern aggregation site. The iNaturalist dataset also provides the opportunity for visual matching of individual sharks that have been rephotographed in the same location.

The quality of data from iNaturalist relies on citizen science contributors knowing the angles and visibility necessary for the photograph to be useful in research, as well as the accuracy of the spatial and temporal data attached to the photograph. As shown by the majority of the unidentifiable photographs from iNaturalist, divers and underwater photographers are more likely to take dramatic shots from in front of or below the shark, or will not be close enough for the photograph to clearly show any distinguishing features past the ones necessary to identify to a species level. The contemporary photographs taken and submitted after the creation of iNaturalist have more reliable temporal data, but the archival photographs uploaded years after they were taken are less useful for seasonal movement research.

5.2 Citizen Science as a Resource

iNaturalist is one of many citizen science platforms available. The use of photographic identification in research across biology and environmental science is rapidly increasing, as is the AI technology used by many online databases to identify, match, and count different organisms.

Citizen science projects are demonstrating a growing ability to assist in research tracking migrations, population size and composition, and recovery from disturbances. A variety of citizen science platforms and collections should be considered and evaluated for any photographic identification study to determine if these free resources are able to provide useful contributions to the study.

There are limitations to how useful citizen science can be depending on the needs of the study and the data available on the citizen science platform in question, but a simple assessment is worth the time spent to determine if the data available is satisfactory. Citizen science contributions are free and while assessing their usefulness can take time, it is not overly complicated and may provide valuable data that would have cost money to obtain otherwise.

5.3 Next Steps

The next steps in this project will be to assist the Sharkbook.ai spot-matching algorithm for the 189 photographs that were submitted from iNaturalist and determine the number of new individuals that were able to be identified from the iNaturalist dataset and how many were able to be matched as rephotographed individuals. Additional research can be done by mapping the number and type of recorded injuries to photographed sharks by location and time to determine if there is a pattern related to when and where the sharks were spotted.

Further investigation into a possible relationship between the location and type/number of visible injuries may be done. There could also be an additional evaluation of photographs to possibly determine the life stage of individuals and the demographics of the East Coast *C. taurus* population through photographs uploaded to iNaturalist. Lastly, a follow-up study comparing the evaluation of the iNaturalist Grey Nurse Shark Watch with alternate citizen science projects such as Reef Watch's Grey Nurse Shark Watch in Queensland, Australia can be done.

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Appendix

Appendix A: iNaturalist photographs uploaded to Sharkbook.ai scanTask algorithm

Table 1. The iNaturalist submissions that met the criteria for Sharkbook.ai and were uploaded as encounters and entered into the spot-mapping system.

URL	Identifiable	visible injuries	sex	Location	State	date	Encounter ID
https://www.inaturalist.org/observations/14036654	Y	No	F	Anna Bay	NSW	22 June, 2014	54644448-ad6f-4679-ab26-6083299487f4
https://www.inaturalist.org/observations/131253367	Y	Dead	N/A	Bawley Point	NSW	17 August, 2022	6b3bc45b-e142-4708-b6c1-4a972f96028e
https://www.inaturalist.org/observations/26219807	Y	No	F	Bondi beach	NSW	July, 2018	6651defc-3884-4a82-9aff-414efd4acb5e
https://www.inaturalist.org/observations/86972489	Y	No	F	Broughton Island	NSW	29 April, 2012	727eae1b-101f-453a-b8ac-6abd74ffc301
https://www.inaturalist.org/observations/80088778	Y	Scars	M	Broughton Island	NSW	23 February, 2020	5a2f201f-2197-4432-9841-d0c206525977
https://www.inaturalist.org/observations/37335010	Y	No	F	Broughton Island	NSW	December, 2019	d9e7abb5-de8d-4e44-83f0-fd4a4d13decb
https://www.inaturalist.org/observations/36168965	Y	No	M	Broughton Island	NSW	23 November, 2019	313b4d97-9407-425a-9431-a23e9fdc193c
https://www.inaturalist.org/observations/36077810	Y	No	F	Broughton Island	NSW	23 November, 2019	a8da5dbf-2141-4318-ace4-1704397f864c
https://www.inaturalist.org/observations/25703524	Y	No	M	Broughton Island	NSW	19 May, 2019	73089a59-cce8-4d4b-8386-028055a34d31
https://www.inaturalist.org/observations/22508972	Y	No	M	Broughton Island	NSW	13 April, 2019	4a7a9a52-13f4-4850-b2de-8e3a0000e83f

https://www.inaturalist.org/observations/22508737	Y	Scars	F	Broughton Island	NSW	13 April, 2019	4eaeee67-b636-47a8-9aa3-b10f98d8961f
https://www.inaturalist.org/observations/22459748	Y	Hook	M	Broughton Island	NSW	13 April, 2019	08b99a28-012f-4a3b-91e9-ab308474e688
https://www.inaturalist.org/observations/21271861	Y	Hook and line	F	Broughton Island	NSW	9 March, 2019	beb88954-8db0-4c14-a136-036c21398aed
https://www.inaturalist.org/observations/17421288	Y	No	F	Broughton Island	NSW	30 August, 2012	d53f5c47-1035-466d-a857-96987b7a13d4
https://www.inaturalist.org/observations/14438274	Y	No	F	Broughton Island	NSW	10 August, 2013	cefb011c-a7a4-48b3-b779-89d05a4fa0bd
https://www.inaturalist.org/observations/14400743	Y	No	N/A	Broughton Island	NSW	8 September, 2013	6e1669b3-9baf-4167-8183-be8415e81775
https://www.inaturalist.org/observations/14376044	Y	No	M	Broughton Island	NSW	21 December, 2010	023903a2-eaf2-4579-b302-b4af524e0c26
https://www.inaturalist.org/observations/14339641	Y	Scars	F	Broughton Island	NSW	20 October, 2013	ef8bdb29-5c15-4628-a59d-3754cd5a09ba
https://www.inaturalist.org/observations/14309017	Y	No	F	Broughton Island	NSW	28 December, 2013	e983a40c-b934-4297-ac3e-a4232b6dccae
https://www.inaturalist.org/observations/14303986	Y	No	F	Broughton Island	NSW	30 December, 2013	da551c31-2395-4345-9b6f-38e7da6518ec
https://www.inaturalist.org/observations/14303754	Y	No	F	Broughton Island	NSW	29 December, 2013	a21af585-d2bc-48a9-a923-3aaba96a068a
https://www.inaturalist.org/observations/14245768	Y	No	M	Broughton Island	NSW	15 February, 2014	edb84a7c-c761-4113-8b45-e5fc456f9c7a
https://www.inaturalist.org/observations/14036480	Y	Scars	M	Broughton Island	NSW	25 July, 2014	5b4c2dfd-01aa-476f-8685-2d5694273761

https://www.inaturalist.org/observations/13904800	Y	No	F	Broughton Island	NSW	23 August, 2014	40864b62-ea60-4d84-bf94-c7256b7f3aee
https://www.inaturalist.org/observations/13880728	Y	No	F	Broughton Island	NSW	13 September, 2014	e2b24ff0-8d96-48fd-a978-60082b9e4c9b
https://www.inaturalist.org/observations/10555820	Y	No	M	Broughton Island	NSW	30 March, 2018	a5f15fd9-6066-4778-afec-701616a71d07
https://www.inaturalist.org/observations/9975087	Y	No	M	Broughton Island	NSW	8 February, 2018	9b39691d-4d30-4efe-981f-7e2a0ce43a3e
https://www.inaturalist.org/observations/50748923	Y	No	M	Broughton Island	NSW	11 May, 2012	4fa31018-115f-4b5d-b143-91b3a7f94867
https://www.inaturalist.org/observations/17391740	Y	No	F	Broughton Island	NSW	23 March, 2013	7464863c-1c97-45b9-8373-4b2358894dc6
https://www.inaturalist.org/observations/14684176	Y	Scars	F	Broughton Island	NSW	22 July, 2018	ac1ddbf1-25a3-47cb-8147-4ebcd1ff7ce2
https://www.inaturalist.org/observations/14509747	Y	No	F	Broughton Island	NSW	13 July, 2013	86793463-6286-419a-99fa-bafb9bf867c6
https://www.inaturalist.org/observations/13446156	Y	No	F	Broughton Island	NSW	8 May, 2016	a34fdeeb-1a41-46c9-8c16-62a6e7681faa
https://www.inaturalist.org/observations/15077994 2	Y	No	F	Broughton Islnd	NSW	12 April, 2015	aeec182c-6a76-4096-8be8-088074279772
https://www.inaturalist.org/observations/29696224	Y	No	F	Brush Island	NSW	28 July, 2019	a654d173-1ab7-4dd1-aa04-f5904a45a768
https://www.inaturalist.org/observations/63463363	Y	No	F	bushragers bay	NSW	18 September, 2020	d27b3780-e03c-4687-9027-d2a46c9d691f
https://www.inaturalist.org/observations/49914308	Y	No	F	Bushranger's Bay	NSW	16 June, 2020	8f8882c2-c223-407f-b235-2344204132ab
https://www.inaturalist.org/observations/49914152	Y	No	F	Bushranger's Bay	NSW	16 June, 2020	d9b42b0a-4c1d-4a12-9a83-ea6158d3d9fb

https://www.inaturalist.org/observations/40010598	Y	Scars	F	Bushranger's bay	NSW	13 March, 2020	f2a23c7a-a9e6-4e29-afa2-7dbcec6612fa
https://www.inaturalist.org/observations/40010013	Y	Scars	F	Bushranger's bay	NSW	13 March, 2020	797a6246-8c94-47f7-bb2c-298766d8b141
https://www.inaturalist.org/observations/27136724	Y	No	F	Bushranger's Bay	NSW	16 June, 2019	cb595be9-ad3c-4839-825e-0ad6feb19d47
https://www.inaturalist.org/observations/22221995	Y	Scar	F	Bushranger's Bay	NSW	8 April, 2019	a7d81ed8-970c-424f-90f4-d246565f84ba
https://www.inaturalist.org/observations/22221807	Y	No	F	Bushranger's Bay	NSW	8 April, 2019	272eb106-ff76-409d-9514-ab8e6e82427c
https://www.inaturalist.org/observations/22220784	Y	Scars	F	Bushranger's Bay	NSW	8 April, 2019	80e0872e-2aba-4e4b-ab12-b037437fdb2f
https://www.inaturalist.org/observations/22132262	Y	Hook?	F	Bushranger's Bay	NSW	3 April, 2019	a7099622-3438-4bcc-ab2d-a480cfa61dc6
https://www.inaturalist.org/observations/5024051	Y	No	F	Bushranger's bay	NSW	29 January, 2017	f2585886-27a3-4030-8ce2-c0c9c9b5b53e
https://www.inaturalist.org/observations/164159707	Y	No	N/A	Bushranger's Bay	NSW	27 May, 2023	deadb2ed-db59-43e5-8249-398775948005
https://www.inaturalist.org/observations/164159118	Y	No	F	Bushranger's Bay	NSW	27 May, 2023	fa22d3e9-9c8a-4172-be66-ab73dd38927c
https://www.inaturalist.org/observations/150516634	Y	No	F	Bushranger's Bay	NSW	27 February, 2023	43a7d866-f28c-45b3-9d98-961902fbdb4f
https://www.inaturalist.org/observations/150515540	Y	No	F	Bushranger's Bay	NSW	27 February, 2023	e7ebe492-0e19-4c6c-9918-5222baef4bbf
https://www.inaturalist.org/observations/148085412	Y	No	N/A	Bushranger's Bay	NSW	5 February, 2023	361815b7-93e0-44a6-907e-0a6397ae1747
https://www.inaturalist.org/observations/145818503	Y	No	F	Bushranger's Bay	NSW	3 January, 2023	2dc6649e-8850-4ca7-a768-75a5862f0737

https://www.inaturalist.org/observations/143350180	Y	No	F	Bushranger's Bay	NSW	18 December, 2021	de700c99-9a16-4128-9f4c-151b427599c7
https://www.inaturalist.org/observations/110552816	Y	Scars	F	Bushranger's Bay	NSW	5 January, 2021	97960378-4152-41cf-ad7a-a3d72bac02cd
https://www.inaturalist.org/observations/105824314	Y	No	F	Bushranger's Bay	NSW	30 January, 2022	0fe91eb2-eff4-4eff-aca3-13a7b34a0704
https://www.inaturalist.org/observations/178449193	Y	Line	N/A	Bushranger's Bay	NSW	30 May, 2023	c3f6b5b8-43af-41bf-8859-3f15df0bece8
https://www.inaturalist.org/observations/188872944	Y	No	F	Bushranger s Bay	NSW	25 October, 2023	5f9be035-482b-43b5-8cbd-6dd6b91d6a2a
https://www.inaturalist.org/observations/112943266	Y	No	M	Bushranger s bay	QLD	19 July, 2021	ef9d9e39-5201-4633-962f-99aac3d99c29
https://www.inaturalist.org/observations/69336234	Y	No	F	bushranger s bay	NSW	6 February, 2021	d796e565-99e5-4019-a8e1-9947e14efd6c
https://www.inaturalist.org/observations/105275908	Y	No	M	Byron Bay	NSW	3 July, 2020	76225587-e9e4-4ca6-b1fa-43f348cbe1b3
https://www.inaturalist.org/observations/158031083	Y	2 Hooks	F	Cabbage Tree Bay	NSW	27 April, 2023	f069b9bd-a8db-49b9-bdab-6c7366711b18
https://www.inaturalist.org/observations/105141991	Y	No	F	Cabbage Tree Bay	NSW	18 January, 2022	c2253582-6119-4bf4-8455-4db4a239aa0b
https://www.inaturalist.org/observations/83494470	Y	No	F	Cabbage Tree Bay	NSW	9 February, 2013	d1ddaf3c-0ebf-4bab-a826-1f355cbb4b6a
https://www.inaturalist.org/observations/79736956	Y	No	F	Cabbage Tree Bay	NSW	22 May, 2021	6614a5e8-4be0-4a5b-a67f-eafbf7b59582
https://www.inaturalist.org/observations/46477824	Y	No	F	Cabbage Tree Bay	NSW	19 May, 2020	734d633b-fd07-4c12-ade1-f94a6ad0339b
https://www.inaturalist.org/observations/4770264	Y	Hook	F	Coff's Harbour	NSW	25 Augus	f8debc73-038b-429a-af8a-8f2c73b686af

						t, 2013	
https://www.inaturalist.org/observations/152197435	Y	No	F	Drum and Drum Sticks	NSW	5 November, 2017	b31fd416-b0c2-4ac9-9bf2-944838c91d56
https://www.inaturalist.org/observations/8899490	Y	No	M	Gold Coast	QLD	27 August, 2013	bc8c3057-c395-43e9-ac97-947dd73f0d0b
https://www.inaturalist.org/observations/8898701	Y	No	M	Gold Coast	QLD	27 July, 2014	10f05dc2-f63a-4bf5-aea0-331b3efe4b24
https://www.inaturalist.org/observations/86972490	Y	No	F	Great Lakes	NSW	29 April, 2012	c8d0f756-ae6f-40b8-8284-93abde420845
https://www.inaturalist.org/observations/16252583	Y	Scars	F	Green Island	NSW	1 September, 2018	d40b249f-41ff-4315-a728-22e2af719cf1
https://www.inaturalist.org/observations/13597713	Y	No	M	Green Island	NSW	11 July, 2015	672b9f2b-d6fe-4eed-8633-c74b33a7c998
https://www.inaturalist.org/observations/4644169	Y	No	F	Green Island	NSW	2 October, 2005	cb32a1d1-d5f1-47db-8717-9138604a0e1c
https://www.inaturalist.org/observations/16093526	Y	Line	M	Green Island	NSW	26 August, 2018	565e354d-91fa-452f-8e3a-b7bf4bb208d1
https://www.inaturalist.org/observations/13906543	Y	Line	F	Green Island	NSW	30 June, 2018	1fbf42a7-d381-4828-9952-37718198f972
https://www.inaturalist.org/observations/162859624	Y	No	F	Jervis Bay	NSW	20 May, 2023	cb3af950-b59b-4a47-bf6f-c102afbc6253
https://www.inaturalist.org/observations/164318424	Y	Dead	M	Jervis Bay Territory	NSW	29 May, 2023	52c0ba84-726f-4906-a34d-d99e3467f314
https://www.inaturalist.org/observations/134267853	Y	No	M	Julian Rocks	NSW	8 September, 2022	29776195-0e00-4726-b6f2-b97457881d59
https://www.inaturalist.org/observations/76488716	Y	No	M	Julian Rocks	NSW	12 December, 2018	f0272dee-a255-43e2-a7f6-6c5a156005f5

https://www.inaturalist.org/observations/76484969	Y	Scars/white marks	F	Julian Rocks	NSW	26 April, 2021	9db2f0ec-eb26-486a-a82d-2d763c7bb6ca
https://www.inaturalist.org/observations/40010078	Y	No	N/A	Killalea lagoon, Shellharbour	NSW	13 March, 2020	549fb162-8fc1-43ed-9031-00a4590960ad
https://www.inaturalist.org/observations/92395942	Y	White spots/marks	F	Lady Musgrave Island	QLD	15 October, 2007	a37cd184-433b-43d6-872d-3d51428457e3
https://www.inaturalist.org/observations/4479594	Y	No	F	Lobster Bay, Beecroft Penninsula	NSW	10 April, 2007	c588dddc-6467-438b-8f63-4058a2314c05
https://www.inaturalist.org/observations/70310931	Y	Scars	F	Long Reef Headland	NSW	28 February, 2021	ca09bf30-1ace-4793-bd19-ba95573593bb
https://www.inaturalist.org/observations/68264853	Y	No	M	Long Reef Headland	NSW	17 January, 2021	bf646a02-9abe-4c5d-b97d-b1300bb9be1c
https://www.inaturalist.org/observations/68029929	Y	No	F	Long Reef Headland	NSW	10 January, 2021	db2974a0-f897-4719-984a-42222141ecb5
https://www.inaturalist.org/observations/67906644	Y	No	F	Long Reef Headland	NSW	11 January, 2021	7ebec728-c2b3-491a-9c46-cda515da2beb
https://www.inaturalist.org/observations/184512290	Y	No	F	Magic Point	NSW	September, 2023	c1cdc5d8-be7e-46d9-bdca-ff1ff4be4045
https://www.inaturalist.org/observations/76101197	Y	No	F	Magic Point	NSW	1 May, 2021	7068fbec-c77e-472a-b8e6-7710eeca2067
https://www.inaturalist.org/observations/49786499	Y	No	F	Magic Point	NSW	21 June, 2012	65bf26b3-a0bd-4b74-be88-2fe97fbd2a46
https://www.inaturalist.org/observations/49786448	Y	No	F	Magic Point	NSW	7 February, 2013	607af3e4-7ec4-47a2-94e5-926c62dec6a0
https://www.inaturalist.org/observations/9029212	Y	Scars	F	Magic Point	NSW	20 March, 2000	55fa4c31-e6cb-4d82-9946-908b450f9f38

https://www.inaturalist.org/observations/4975967	Y	No	F	Magic Point	NSW	18 April, 2010	825bd98b-b109-4966-adf4-e980b899ab81
https://www.inaturalist.org/observations/4906243	Y	No	F	Magic Point	NSW	27 February, 2001	59db8938-60d1-4919-8510-3e9b54d8d4e7
https://www.inaturalist.org/observations/4770263	Y	No	F	Magic Point	NSW	28 December, 2014	265c24a2-a3b7-4d76-9afd-98441b1eb30e
https://www.inaturalist.org/observations/184779182	Y	No	F	Malabar	NSW	25 September, 2023	4b808ada-e559-4e2e-aa7d-8b97a0c16a07
https://www.inaturalist.org/observations/178122522	Y	No	F	Manly	NSW	28 July, 2023	c3f6b5b8-43af-41bf-8859-3f15df0bece8
https://www.inaturalist.org/observations/138919950	Y	No	F	Manly	NSW	16 October, 2022	951f9d5d-5abb-4edb-9b42-836b214cb879
https://www.inaturalist.org/observations/119217321	Y	No	F	Manly	NSW	29 May, 2022	643c2d6a-d91d-4218-8401-ca189b7cfe5c
https://www.inaturalist.org/observations/105305188	Y	No	F	Manly	NSW	21 January, 2022	ac64d8aa-1995-4df5-8b66-614bda882412
https://www.inaturalist.org/observations/74488979	Y	No	F	Manly	NSW	19 November, 2020	57031626-06e3-4aad-927f-6970c7693b84
https://www.inaturalist.org/observations/62992095	Y	hook	F	Manly	NSW	19 October, 2020	e9eaf03a-f560-4fc2-9fb8-0ebb17021e20
https://www.inaturalist.org/observations/61545012	Y	No	F	Manly	NSW	3 October, 2020	47112443-2065-452e-a09f-e671180c6bf8
https://www.inaturalist.org/observations/59760027	Y	No	F	Manly	NSW	16 September, 2020	8e239ba7-31db-4e8a-9e78-2a2492e6f07d
https://www.inaturalist.org/observations/52459106	Y	No	F	Manly	NSW	9 July, 2020	8928796c-63db-4fdb-827f-4eede56031f0

https://www.inaturalist.org/observations/36237047	Y	No	F	Manly	NSW	1 December, 2019	ed0397f4-392c-497f-bfcf-2b9a21856e5b
https://www.inaturalist.org/observations/28722946	Y	Scars	F	Manly	NSW	13 July, 2019	77e71127-60f5-4727-a0c1-e23f08e4e2f0
https://www.inaturalist.org/observations/166987472	Y	No	F	Manly	NSW	11 June, 2023	01a12058-8b09-4be5-823e-3a76bf374647
https://www.inaturalist.org/observations/26320701	Y	Line	F	Montague Island	NSW	23 February, 2019	2ea00787-972a-4eca-a962-d1d56164b47a
https://www.inaturalist.org/observations/9122113	Y	No	F	Montague Island	NSW	9 December, 2017	5e689b7a-0890-4fa6-9d01-32c680eda758
https://www.inaturalist.org/observations/131180758	Y	No	F	North Ningaloo	WA	November, 2020	2d2d4a51-8041-4b41-88eb-03036856c8b9
https://www.inaturalist.org/observations/32091361	Y	No	M	North Ningaloo	WA	September, 2019	c191afa2-4d95-4048-b6e0-645d4d6828ce
https://www.inaturalist.org/observations/103407012	Y	No	F	North Rock	NSW	18 December, 2021	2b0b7e1e-0cce-4ef1-85bf-399a782535ff
https://www.inaturalist.org/observations/39134975	Y	No	F	North Rock, Broughton island	NSW	23 February, 2020	5ddd9fa4-a49d-4789-9d1a-53fc4098a2d1
https://www.inaturalist.org/observations/74465823	Y	Damaged second dorsal	M	North Solitary Island	NSW	26 February, 1995	1c4c75b0-fa5c-4608-ad39-dec3355614cb
https://www.inaturalist.org/observations/6378599	Y	No	M	North Solitary Island	NSW	27 May, 2017	f7187838-1ed7-4e14-a9f4-e005a54f72a8
https://www.inaturalist.org/observations/141879051	Y	No	M	North Stradbroke Island	QLD	21 August, 2012	bcc0ed49-6925-4c69-9efc-734cbf1db007
https://www.inaturalist.org/observations/141879050	Y	No	M	North Stradbroke Island	QLD	21 August, 2012	0b6c6823-272d-43f5-8c5d-d425003d2cbe

https://www.inaturalist.org/observations/141879049	Y	No	M	North Stradbroke Island	QLD	21 August, 2012	e70ddf95-71dc-4392-92d8-6b85b4cbfb50
https://www.inaturalist.org/observations/58242645	Y	No	F	North Stradbroke Island	QLD	31 August, 2020	7c42beee-25e1-4b6a-9129-41bf1d0d5aaf
https://www.inaturalist.org/observations/29174774	Y	No	M	North Stradbroke Island	QLD	22 September, 2012	bf586d1c-53f1-42cf-8761-de0d28efcc4e
https://www.inaturalist.org/observations/29171637	Y	No	M	North Stradbroke Island	QLD	29 June, 2013	39452208-cd74-468c-a355-80512e750cd6
https://www.inaturalist.org/observations/29058218	Y	No	M	North Stradbroke Island	QLD	9 October, 2011	d58873a5-6f00-40f4-9078-ee52cd35f382
https://www.inaturalist.org/observations/120796755	Y	No	F	Northern Beaches Council	NSW	7 June, 2022	67fc9d5f-d16c-4a55-9075-b29039855d0d
https://www.inaturalist.org/observations/120598136	Y	No	F	Northern Beaches Council	NSW	6 June, 2022	3ea80e05-1b69-4316-9607-4ce5d180b5c6
https://www.inaturalist.org/observations/106430462	Y	No	F	Northern Beaches Council	NSW	9 Febrary, 2022	ee8da0b3-6247-4fc1-821d-01f2439f58c3
https://www.inaturalist.org/observations/82658036	Y	No	F	Northern Beaches Council	NSW	12 June, 2021	316840ed-4e43-471a-a4b2-26015471fb31
https://www.inaturalist.org/observations/165518640	Y	Scars	N/A	Perth	WA	June, 2023	9a375672-5cbf-4b4e-b57d-40808b1744a1
https://www.inaturalist.org/observations/165518639	Y	No	F	Perth	WA	June, 2023	69183510-5c21-4e20-b726-adf8d8ab6c4b
https://www.inaturalist.org/observations/103959029	Y	No	F	Perth	WA	November, 2021	ad4aad4a-2721-4b08-b468-4638fb6e16d0
https://www.inaturalist.org/observations/48904384	Y	No	F	Perth	WA	June, 2020	a03782e1-c530-430a-b103-3d6bdb142110
https://www.inaturalist.org/observations/48904198	Y	No	F	Perth	WA	June, 2020	b28da2c1-6d5c-4c8c-8cd6-68b6975b96a2

https://www.inaturalist.org/observations/143633865	Y	No	F	Perth	WA	December, 2022	7a1a72c7-1093-463c-8aa0-7604521fd909
https://www.inaturalist.org/observations/51354639	Y	No	F	Perth	WA	September, 2017	ccce0037-349d-44ba-815d-f9684c5c5201
https://www.inaturalist.org/observations/150442699	Y	No	F	Randwick	NSW	11 February	c8cf8cd3-1212-4a36-bdde-55640aa7ba4d
https://www.inaturalist.org/observations/150364873	Y	No	F	Randwick	NSW	11 February, 2023	cb427afa-6dee-44d5-8ce6-34f9ef3de891
https://www.inaturalist.org/observations/98181598	Y	No	F	Randwick	NSW	27 July, 2012	a5631a2c-3c71-42b2-9f6a-2f5c86bbd600
https://www.inaturalist.org/observations/140362768	Y	No	N/A	Sandy Beach	NSW	29 October, 2022	1ebef611-4c69-4287-a55a-60e6472372c7
https://www.inaturalist.org/observations/176885334	Y	No	F	Seal Rocks	NSW	June 2023	fb27ac48-4cc5-4961-875c-68eaa3bb0ff6
https://www.inaturalist.org/observations/176885323	Y	Scars	F	Seal Rocks	NSW	June 2023	4adaddad-6547-4709-afa6-4e18d47cc992
https://www.inaturalist.org/observations/164183340	Y	No	M	Seal Rocks	NSW	25 May, 2023	d353aba0-93e3-4ea8-8b6d-7d0e161def55
https://www.inaturalist.org/observations/5203273	Y	Scars	M	Seal Rocks	NSW	3 May, 1996	6c7b1634-7a40-4ecf-aece-ca8a8fb7d0b4
https://www.inaturalist.org/observations/4932021	Y	No	F	Seal Rocks	NSW	27 April, 2008	af3ce14f-f3d8-4986-840d-9077df7d5993
https://www.inaturalist.org/observations/4729877	Y	Scars	M	Seal Rocks	NSW	3 May, 2012	99b7bbba-2db9-434f-8b57-ec2095b19433
https://www.inaturalist.org/observations/160290946	Y	No	F	Seal Rocks	NSW	6 May, 2023	6cfa5218-d691-41d7-9621-2175c27acd53
https://www.inaturalist.org/observations/151083635	Y	No	N/A	Seal Rocks	NSW	9 May, 1986	c64cf55b-979b-4d7c-8b62-091bcbf4e322
https://www.inaturalist.org/observations/151083634	Y	No	F	Seal Rocks	NSW	9 May, 1986	70f6d2ca-ce58-4b34-a937-18c34f628e19

https://www.inaturalist.org/observations/151083633	Y	No	F	Seal Rocks	NSW	9 May, 1986	37af6e42-2762-45bd-83d0-a51ae9040a08
https://www.inaturalist.org/observations/151083632	Y	No	F	Seal Rocks	NSW	9 May, 1986	107dc7b4-37f7-4d53-b219-8d6d2fefffdd
https://www.inaturalist.org/observations/151083631	Y	No	F	Seal Rocks	NSW	9 May, 1986	12694660-a5e2-4c06-9e30-74aa88bc046c
https://www.inaturalist.org/observations/151083629	Y	No	F	Seal Rocks	NSW	9 May, 1986	94571a53-03f4-4b15-b303-2934dc165b73
https://www.inaturalist.org/observations/151083625	Y	No	F	Seal Rocks	NSW	9 May, 1986	1a479f74-2578-4c2e-8b56-1d41efc0bef7
https://www.inaturalist.org/observations/151083618	Y	No	F	Seal Rocks	NSW	9 May, 1986	f996bafd-53c7-4a33-886f-c9575bccba0c
https://www.inaturalist.org/observations/151083615	Y	No	F	Seal Rocks	NSW	9 May, 1986	f262c64f-50b0-4db5-978f-0bdb461d74d9
https://www.inaturalist.org/observations/151083609	Y	No	F	Seal Rocks	NSW	9 May, 1986	634de384-a413-45f0-b6f1-d925c57c0f32
https://www.inaturalist.org/observations/151083597	Y	No	F	Seal Rocks	NSW	9 May, 1986	444e8368-cef6-48dc-8151-9317f7bb5370
https://www.inaturalist.org/observations/151083594	Y	No	M	Seal Rocks	NSW	9 May, 1986	c4ae4026-6373-4ab3-9f28-d795566dca5e
https://www.inaturalist.org/observations/151083591	Y	No	M	Seal Rocks	NSW	9 May, 1986	7892135e-adb1-4917-9bd8-0d7243aeaff2
https://www.inaturalist.org/observations/151083581	Y	No	F	Seal Rocks	NSW	9 May, 1986	db89809d-6167-4d63-b365-21e067eefc05
https://www.inaturalist.org/observations/151083580	Y	No	F	Seal Rocks	NSW	9 May, 1986	8d576d64-0db1-4713-acae-801a3158fa2b
https://www.inaturalist.org/observations/151083578	Y	No	F	Seal Rocks	NSW	9 May, 1986	515203f0-6831-4a7a-8fc0-f2a8a8e4e213
https://www.inaturalist.org/observations/151083577	Y	No	F	Seal Rocks	NSW	9 May, 1986	d6661cb8-6219-48bd-bc27-2ed8a7e7e41c

https://www.inaturalist.org/observations/125872087	Y	No	N/A	Seal Rocks	NSW	1 June, 1984	4be72fe1-8389-4e0c-b459-8e8904dbaa9c
https://www.inaturalist.org/observations/150397297	Y	No	F	Solitary Islands Marine Park	NSW	24 February, 2023	d76d6ea0-b6c1-43b3-929c-8069cfd3157c
https://www.inaturalist.org/observations/13815649	Y	No	M	Sould Solitary Island	NSW	26 June, 2018	2e11030f-51e9-4d6b-8fb2-177d2c233857
https://www.inaturalist.org/observations/183645727	Y	No	M	South Solitary Island	NSW	26 August, 2023	e1e3fa83-710e-4089-bfbd-801d167109b3
https://www.inaturalist.org/observations/183642077	Y	No	M	South Solitary Island	NSW	6 August, 2023	bb2a72d2-4cbf-465d-b63a-4d3353ff3f5b
https://www.inaturalist.org/observations/156523205	Y	Scars, damaged Dorsal	M	South Solitary Island	NSW	1 April, 2023	68db74bd-9a38-4904-ab91-2d4cbad069cc
https://www.inaturalist.org/observations/156522955	Y	No	M	South Solitary Island	NSW	1 April, 2023	75efd3a5-aeb6-4363-a2b0-b93dc2e54c0e
https://www.inaturalist.org/observations/142661926	Y	No	M	South Solitary Island	NSW	12 November, 2022	d4b44955-8d68-45a3-be22-7fac0bd2281f
https://www.inaturalist.org/observations/142661845	Y	Hook	M	South Solitary Island	NSW	12 November, 2022	d771c403-bd71-4733-880e-95b3a245566e
https://www.inaturalist.org/observations/142661769	Y	Scars	M	South Solitary Island	NSW	12 November, 2022	e78a87d8-9058-4e53-b403-42862731189c
https://www.inaturalist.org/observations/127419333	Y	No	M	South Solitary Island	NSW	16 July, 2022	449eb60e-c5cb-482f-944b-9044103a5dbd
https://www.inaturalist.org/observations/97425068	Y	No	M	South Solitary Island	NSW	3 August, 2019	3e9aecda-e584-4055-bce1-784b6539cfca
https://www.inaturalist.org/observations/5133217	Y	No	M	South Solitary Island	NSW	27 June, 2000	ec0125ca-bc26-4fd0-a7ba-f5d05e3c2155
https://www.inaturalist.org/observations/103187023	Y	No	M	South West Rocks	NSW	16 Nove	f9cb5459-361f-4b62-ad2e-02f7e64e8c44

						mber, 2015	
https://www.inaturalist.org/observations/4773244	Y	No	F	South West Rocks	NSW	23 March, 2008	31e3ff8c-58c8-4f2a-bad5-6142e05636a7
https://www.inaturalist.org/observations/4770265	Y	No	F	South West Rocks	NSW	12 October, 2013	35e8ea8d-b2ac-429c-b810-0cfd7ff62d01
https://www.inaturalist.org/observations/38013080	Y	First Dorsal	M	South west rocks	NSW	21 October, 2019	9a51f8ad-40a0-425e-926c-9132290214b6
https://www.inaturalist.org/observations/135291590	Y	No	M	Stadbroke Island	QLD	11 September, 2022	7e9bc778-5d16-498b-9bdb-7c75ae2dd294
https://www.inaturalist.org/observations/150983079	Y	No	N/A	Sydney	NSW	27 May, 2020	5da22c98-bdaa-4f2e-b333-2d08fd4c78ea
https://www.inaturalist.org/observations/169566347	Y	No	N/A	Tamarama	NSW	24 June, 2023	9eafb719-4c73-4993-980f-3ed9a8fd7df4
https://www.inaturalist.org/observations/154501085	Y	No	M	Tweed-Heads	NSW	9 August, 2019	2fb0f5c3-a6a4-4cf2-834f-2983bb188514
https://www.inaturalist.org/observations/154501084	Y	No	F	Tweed-Heads	NSW	9 August, 2019	c552bd5a-4169-43d4-b667-84795696e5ad
https://www.inaturalist.org/observations/154501083	Y	Scars	M	Tweed-Heads	NSW	9 August, 2019	accf91bb-acb2-4faa-a1e8-705950485725
https://www.inaturalist.org/observations/154501082	Y	No	M	Tweed-Heads	NSW	10 August, 2019	109e9aaf-5bf9-4e6f-b4b0-f828920aed99
https://www.inaturalist.org/observations/88464008	Y	No	F	Waverley	NSW	24 July, 2021	c30042ec-efb2-470a-b011-2c10bbc0a283
https://www.inaturalist.org/observations/171529500	Y	No	F	Wolf Rock	QLD	19 June, 2023	dfb610e1-d38d-4196-aa4c-0e18df8fa2ce
https://www.inaturalist.org/observations/153103958	Y	No	F	Wolf Rock	QLD	30 March, 2023	a5890b3e-2c8d-4124-b202-df3615cec981

https://www.inaturalist.org/observations/168790672	Y	No	F	Wolf Rock	QLD	19 June, 2023	e206eb93-d053-4293-8042-9591eeb7e7f3