

Q&A WITH
PROF. CHARLIE D.
HEATUBUN

EXPEDITION:
NORTH
STRADBROKE

RECEIVING
OUR BIGGEST
EGG SHIPMENT

the ReShark^{er}

INTERNAL COMMUNICATIONS • MARCH 2024



ReShark



An international, collective effort
to recover threatened sharks
and rays around the world

ACTIVE PROJECTS



Raja Ampat, Indonesia

STEERING COMMITTEE

Dr. Erin Meyer (Co-Chair)
Nesha Ichida (Co-Chair)
Abraham Sianipar
Dr. Alistair Dove
Dr. Caitlin Hadfield
Dr. Christine Dudgeon
Leah Neal
Dr. Mark Erdmann
Mochamad Iqbal Herwata

COVER

Accompanying the students from Child Aid Papua to collect snails (*bia bor*) and clams (*bia kodok*) from the mangroves around Gam for the shark pups at the RARCC nursery. Photo by Nathaniel Soon.

EDITOR

Nathaniel Soon

PHOTOGRAPHY

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IN CONVERSATION WITH
PROF. CHARLIE D. HEATUBUN

*Reflecting on the StAR Project with Head of the West Papua
Province Regional Research and Innovation Agency (BRIDA)*

Prof. Charlie Heatubun delivering the opening address at the official West Papua Provincial Government launch event for the StAR Project in Indonesia, November 2022



www.reshark.org

by **ABRAHAM SIANIPAR**
ReShark Council



On 27 May 2021, a high-level meeting in the capital city of Jakarta brought together local and regional agencies, including special staff to the President of the Republic of Indonesia, along with representatives from multiple departments of the Ministry of Marine Affairs and Fisheries (KKP), as well as numerous non-governmental organizations, and members of the StAR Project Steering Committee. The day culminated in the signing of a governmental commitment to support the StAR Project. Chairing this meeting was none other than Head of the West Papua Province Regional Research and Innovation Agency (BRIDA), Prof. Charlie Heatubun, along with then Governor of West Papua, Dominggus Mandacan. BRIDA has since served as the kingpin in the implementation of the StAR Project in Raja Ampat.

We recently sat down with Prof. Heatubun to hear his thoughts on the progress of the StAR Project as well as his aspirations for the future:

What were your initial thoughts when you were first approached to collaborate on the StAR Project?

As a scientist, I always keep an open mind. When I was first introduced to the StAR Project, I was delighted. I felt that the team behind it had truly done their homework. I was confident that such an innovative project, which harnesses the breeding potential of public aquaria to restore depleted wild populations, would reap success in Raja Ampat's waters. I felt it is our duty as government to play a leading role in the project's implementation. I'm very grateful that from the beginning, Governor Mandacan was very supportive. His seriousness in turn solidified the governmental commitment for the StAR Project. As we look back at our progress today, we're proud of how the StAR Project has successfully demonstrated a proof of concept, and can now serve as a model for other species conservation programs around the world.



How important is the StAR Project to you and the Papuan community in Raja Ampat?

From the very beginning, BRIDA was extremely sincere in leading the implementation of the StAR Project in Raja Ampat. According to the commitment made by the West Papua Provincial Government in the Manokwari Declaration, we endeavor to conserve 70% of land cover and 50% of our ocean. We're also looking at the Ridge to Reef (R2R) approach through integrated land and seascape management within the Bird's Head Seascape. The StAR Project complements these conservation goals well. To me, it was evident that it would not only help our ocean, but also tangibly benefit the local community through sustainable tourism.

Raja Ampat has long been known as a premier diving destination. The StAR Project (and the zebra shark in particular) could further elevate Raja Ampat's appeal among the diving community. Such an icon could be used to rally

the public to protect nature, which in turn creates opportunities for the community.

When I give university lectures, I regularly mention that we humans tend to be rather anthropocentric. Advancements in technology have bred a certain arrogance and self-centeredness among us. But the truth is, humans are just another species on this planet and we could very well be driven to extinction too. With that in mind, we need to have a balanced perspective, as one of God's creations, that our every action impacts the wider ecosystems.

Traditional *adat* communities have their own indigenous names for species they live in close proximity with. These species are not just living things. They each have their own cultural value. And so, each species that goes into extinction carries with it a great deal of loss for our civilization and culture. I've thus taken the StAR Project very seriously and remain committed to delivering the best results possible.



What is your favorite part of the StAR Project?

As a founding governmental partner of the project, we largely spearhead the administrative coordination behind-the-scenes. But I also like to get involved in the rigorous scientific aspects, which include field implementation and data analyses. Personally, I do enjoy just looking at the eggs and the hatchlings in the nursery and the sea pen. I'm even more excited when I witness their release into the wild.

From selecting shark parents with the right genetics and the daunting shipment process to ensuring the pups grow up well in the nurseries and the eventual release, so much goes into the project! I often see this as an art — navigating intricacies and complexities to achieve an end goal. It is indeed a balancing act, considering how many stakeholders are involved in the StAR Project, not to mention how it now comes under a larger ReShark umbrella. We are bound to continue bringing in more players and projects into the mix.

Regardless, we always strive to give our best and ensure things run smoothly, especially after Charlie (the first of two sharks to be released) was named after me, as an appreciation of my contributions. I was very proud of that but also couldn't help feeling a small sense of worry. Once these young sharks are released, anything could happen to them. I do wish Charlie the best of luck in the wild! I was heartened by a recent observation of

a young zebra shark in Wayag, of similar size to Charlie. That made me very excited! I sure hope it was him, and that the sharks we release are all thriving in the wild.

What about the StAR Project stands out to you, as compared to other multi-national collaborations?

From the outset, the StAR Project already stood out because of the sizable number of global partners involved. For me and BRIDA as a whole, this is perhaps the first collaboration focused on the conservation of a marine species. The zebra shark left an impression on me as it draws a sharp contrast to the otherwise scary image commonly associated with sharks. The zebra shark is actually quite shy and I knew it would be an iconic species for Raja Ampat. In Indonesian, we refer to the species as *hiu belimbing*, which translates into 'starfruit shark'. People were initially confused as we refer to the leatherback turtle as *penyu belimbing* and there's yet another shark named after starfruit.

The large number of partners involved also poses challenges. Inter-agency coordination at such a scale is tricky. This process has allowed us to learn a lot about the importing process, among other administrative procedures, that we were previously unaware of. I am indeed very grateful for the wonderful collaboration that underpins the StAR Project coalition's work. I'm convinced we can truly be an inspiration for future collaborative projects of similar nature in other parts of the world.



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I am indeed very grateful for the wonderful collaboration that underpins the StAR Project coalition's work. I think we can truly be an inspiration for future collaborative projects of similar nature in other parts of the world.



Prof. Charlie Heatubun (right) with then Governor of West Papua, Dominggus Mandacan (left)

Aquarists from RARCC gather at Wayag to bid farewell to Charlie before his release





How was the StAR Project initially perceived by other governmental agencies?

In the beginning, many people didn't quite understand what the project entailed. But through constant communication and media engagement, we started receiving more recognition and appreciation from everyone, including national and provincial governmental agencies, as well as other local and regional partners.

While the current implementation site in Raja Ampat now falls under the jurisdiction of the newly-formed Southwest Papua Province, we remain proactive in coordinating the progress of the project with the new governmental agencies. Of course, they have been eager to contribute but are still unsure of how best to. My team and I are looking forward to further engagement with them. Even though the project site is no longer under the West Papua Province anymore, as a founding partner, we will still be committed to the StAR Project and perhaps future ReShark initiatives as well. The most important thing for us is to always continue prioritizing collaboration — that has been a fundamental part of the project since its inception which we hope will only grow from here on out.

The laborious process of building
at RARCC led by the local



How do you feel about the inclusivity of the project, specifically with regards to the involvement of the local Papuan community? How could we potentially do better in this area?

Considering that the StAR Project was implemented in Papua, we have made sure that the traditional *adat* communities and their leaders have been involved since the beginning. On top of that, we have also engaged the local youths, students, governmental agencies and other partners. I believe that every project in Papua will greatly benefit from having a local Papuan leading or at least heavily involved. Moving forward, the recruitment of shark aquarists and the various staff involved in population monitoring efforts should prioritize the Papuan community, including students from Papuan universities, especially the University of Papua (UNIPA). This is of paramount importance in ensuring we empower them and build up local capacity and knowledge through the project.

We also want to ensure sustainability – that the ideas, values, and stories we have gained are passed on in perpetuity. That requires selecting and training the right people, especially in the Papuan context. If we want to pass along our legacy to future generations, we need to prepare them as early as possible. I’ve shared about this in my lectures and also when talking to partners. I do believe that there is tremendous potential for the StAR Project or ReShark in general to explore or even provide scholarship opportunities for university students in Papua and have them directly involved in the project. The best place to start would be the Marine and Fisheries Faculty of UNIPA. Apart from the students, the university itself can also be a fantastic knowledge repository

for the project. The array of knowledge and experiences gained could be made available for student learning, and perhaps even infused into their curriculum.

What are some key takeaways from the StAR Project that you could see being replicated in other projects?

There’s honestly plenty of positive takeaways we have gained from the StAR Project, including amazing standards set in areas like fundraising, scientific research and publications, permitting processes, and policy development. Many of these best practices are already being implemented in other collaborative projects we are currently leading as well, one of which is the Crown Jewel Papua. This project targets an integrative landscape management that focuses on watersheds as the main life support of the Papuan community. It similarly demands us to work closely with multiple provincial and sub-national governmental agencies, as well as conservation and development organizations.

I’m constantly impressed at how the StAR Project coalition has chosen the right people for their Steering Committee and everyone maintains such a positively collaborative spirit while showcasing their various expertise to drive the project forward. That’s something else I would like to replicate. Indeed, more collaborative species conservation initiatives are much-needed in West Papua, such as ones focused on the birds-of-paradise. We have an upcoming collaboration with Cornell University which will feature several Indonesian NGOs as well, so I’m looking forward to applying what we’ve learnt with the StAR Project there too.



During his visit to the RARCC nursery, Prof. Charlie Heatubun meets Charlie, the zebra shark, for the first time

As we look forward to the next ReShark project, what advice would you provide?

The most important thing is that everyone remains committed to the values of collaboration and partnership. It's also essential that there be a clear division of responsibilities and duties among the various partners, especially for fellow governmental partners.

We as the government need to take the lead in such initiatives. It is only right that we lead the way and inspire confidence while our fellow partners have our back. Only so can we guarantee that such projects are implemented smoothly. For instance, several major StAR Project events would not have been possible if we, as the lead governmental institution, did not provide the necessary documentation.

That said, the government should also remain open to feedback and inputs on how to improve. We cannot be fixated solely on

the material gains from such projects. Instead, our focus should always be about how we can contribute to the success of these initiatives. Admittedly, governmental agencies will have our own set of shortcomings. That's where we will certainly benefit from our partners' support. If we work together, we can achieve anything. We'll always be more than happy to support our partners in the best way possible.

On a more philosophical note, I think that what we're presently is really about creating a better future for our world. There's a saying in West Papua - No matter what we're doing right now, our duty is to leave our future generations with water springs (*mata air*) and not tears (*air mata*). We need to bequeath life to our children. Not only human life, but also natural treasures like biodiversity, healthy ecosystems and everything in between. All of these depend on the actions of today.





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There's a saying in West Papua – No matter what we're doing right now, our duty is to leave our future generations with water springs (mata air) and not tears (air mata). We need to bequeath life to our children. Not only human life, but also natural treasures like biodiversity, healthy ecosystems and everything in between. All of these depend on the actions of today.

(From left to right) Meity Mongdong, Nesha Ichida, Dr. Erin Meyer, Actor Harrison Ford, Dr. Mark Erdmann, Iqbal Herwata, and Prof. Charlie Heatubun witnessing the first zebra shark releases







X

EXPEDITION:
NORTH STRADBROKE

Tagging leopard sharks in Moreton Bay, Australia

Dr. Christine Dudgeon photographs an adult leopard shark while on expedition at North Stradbroke Island



“

Our work off North Stradbroke Island focuses on a seasonal aggregation of adult Indo-Pacific leopard sharks. We employ a range of techniques to research their biology and ecology to inform the StAR Project. This includes taking photos of spotting patterns to track individuals through time, sampling blood and tissue to investigate reproductive hormones and diet, and acoustic tracking to understand migratory patterns and identify critical habitats.

Dr. Christine Dudgeon
Senior Research Fellow, University of the Sunshine Coast & University of Queensland
Co-Chair, StAR Project Research Working Group
StAR Project Steering Committee





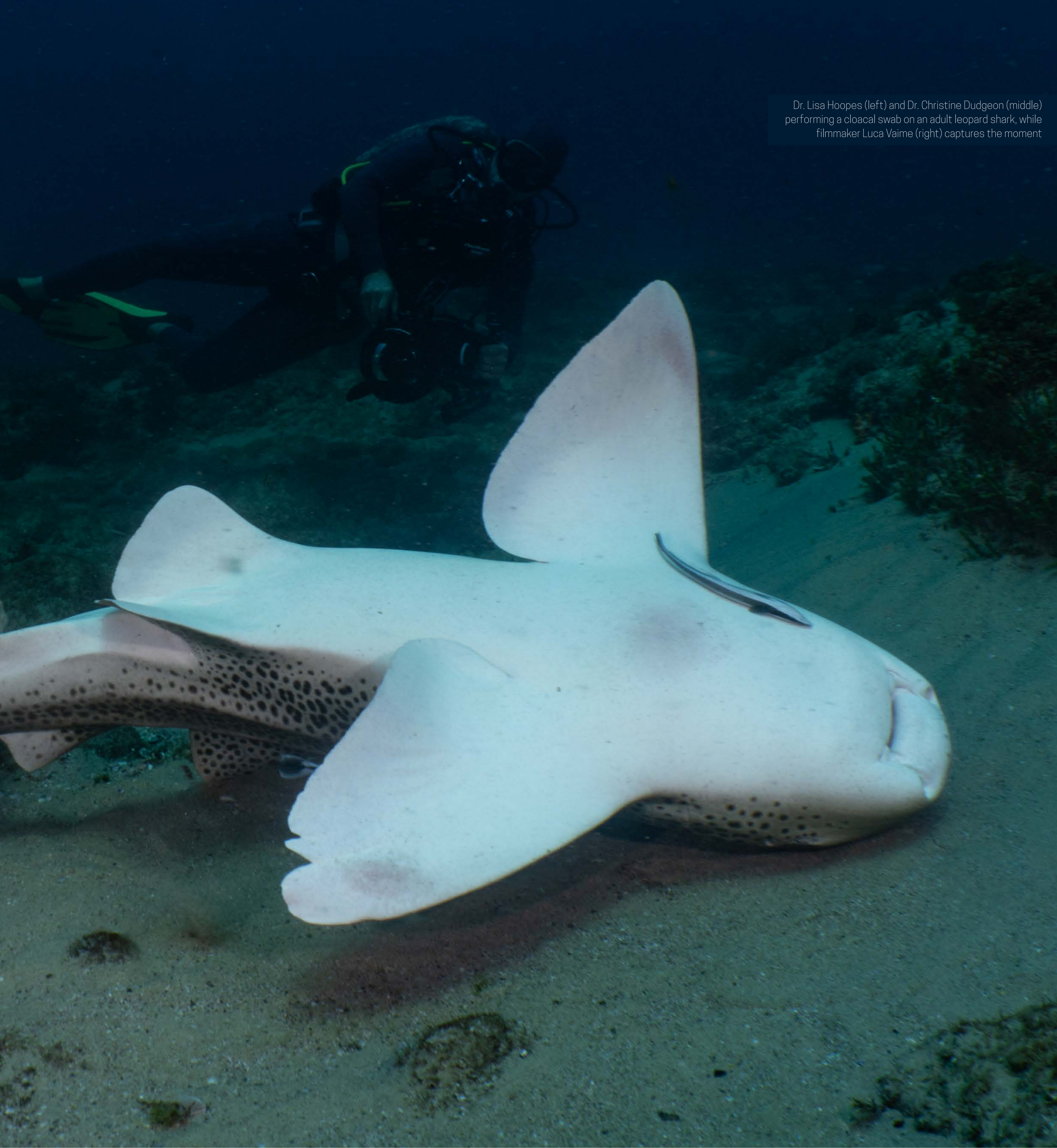
North Stradbroke Island (Minjerribah), located in Moreton Bay in Queensland, Australia, is a summer aggregation site for leopard sharks. Researchers suspect that this area is where they come to mate, before they move north to the Great Barrier Reef in winter to lay their eggs.

The big aggregations that can be found in Straddie make it a really conducive place to study the species. Several members for the ReShark Council and StAR Project Steering Committee including Dr. Alistair Dove (CEO, Museum of Science & History), Dr. Lisa Hoopes (Senior Director of Research and Conservation, Georgia Aquarium) and Dr. Mark Erdmann (Vice President of Asia Pacific Marine Programs, Conservation International) were all already in Australia for a separate whale shark expedition up north earlier on.

It was the perfect opportunity for them to join resident leopard shark researcher Dr. Christine Dudgeon (Senior Research Fellow, University of the Sunshine Coast & Co-Chair of the StAR Project Research Working Group) later in the month to work on the adult leopard sharks. This trip builds on earlier work which commenced in November 2021, where 20 leopard sharks were tagged and samples obtained for diet and reproductive analysis.

As part of the expedition, the team managed to: (1) Capture a lot of photos for the Spot The Leopard Shark photo-ID database, (2) Acoustic tag 3 females, (3) Take cloacal swabs to look at what their natural diet is (to better inform what we feed the StAR Project pups), and (4) Take blood samples to look at hormones and microplastic contamination.

Dr. Lisa Hoopes (left) and Dr. Christine Dudgeon (middle) performing a cloacal swab on an adult leopard shark, while filmmaker Luca Vaime (right) captures the moment



A photograph of a white-spotted wedgefish, *Rhynchobatus australiae*, resting on a sandy seabed. The fish is elongated with a pointed snout and a white spot near its eye. In the background, another similar fish is visible, appearing to be a stalker. The water is clear and blue.

A white-spotted wedgefish, *Rhynchobatus australiae* (front) appears to have a stalker (back)

With the cloacal swabs and blood draws, the team practiced doing them both on sharks they caught and brought to the surface and on sharks underwater. The team hopes to optimize things to a point where most work can be performed underwater so that the same protocols can be applied on juveniles in Raja Ampat for the StAR Project as well.

In the end, the team managed to sample 10 sharks they caught and brought to the surface, and they took successful cloacal swabs from 7 animals underwater. The underwater blood draws turned out to be less successful and more experimentation with this protocol will be required.

Team involved:

- Dr. Christine Dudgeon
- Dr. Adam Barnett
- Dr. Alistair Dove
- Dr. Asia Armstrong
- Dr. David Robinson
- Dr. Lisa Hoopes
- Dr. Mark Erdmann
- Dr. Simon Pierce
- Cameron Cotterell
- Luca Vaime
- Sea World Gold Coast's Veterinary and Husbandry Teams

Supporters:

- Sea World Foundation
- Biopixel Oceans Foundation
- Conservation International

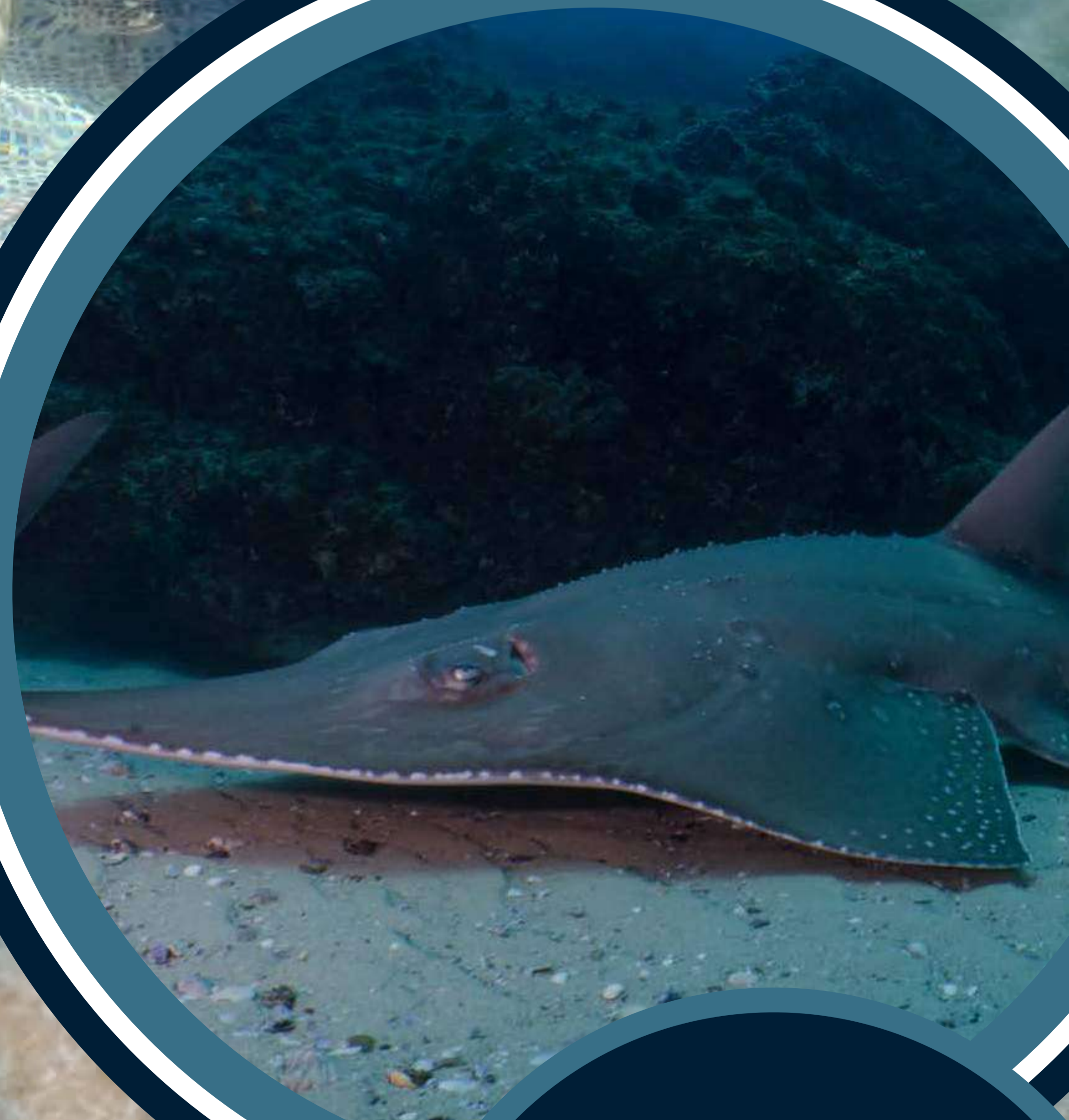


EXPEDITION HIGHLIGHTS

10 leopard sharks (8 ♀, 2 ♂) brought to the surface for processing. Acoustic tags inserted into females. Genetic swabs, cloacal swabs, blood and microplastic samples obtained from each individual.



7 leopard sharks sampled underwater with swabs. Ambient swabs also taken in water column next to position of sharks.



Tissue sampled from **1 white-spotted wedgefish** (*R. australiae*).

Dr. Alistair Dove, Dr. Lisa Hoopes and Dr. Mark Erdmann (left to right) with the 21 eggs that were donated by Cairns Marine for the StAR Project



RECEIVING OUR BIGGEST EGG SHIPMENT

*21 eggs from Cairns Marine arrived at
the nurseries in December 2023*

by **MADE ABIYOGA**
Thrive Conservation





MILESTONE FOR THE StAR PROJECT

2023 proved to be a demanding year for the StAR Project team. Despite reaching pivotal milestones, and experiencing many 'firsts', navigating through a year of uncertainty had been nothing short of a challenge. That is not to say that the year wrapped up on a negative note. In fact, it truly ended with a bang!

The StAR Project relies on a network of aquarium partners to provide eggs that can be reared in our two specialized shark nurseries. Our projections for the number of sharks to be raised and released annually have long been set, yet the drive to breed relies almost exclusively on the fecundity of the parent sharks. Unfortunately, this has been a rather slow reproduction year for our broodstock. Nevertheless, despite several incidents of unsuccessful copulations and production of unviable eggs, we managed to conduct two successful shipments in September and October respectively. Indeed, this is a relatively small number but at the end of the day, every shark counts.

In the past year, the Indonesian government had also streamlined their permit application process by developing an online 'national single window', centralizing all the relevant governmental agencies into a coordinated system. But, as with all things new, navigating the system proved to be a rather foreign process. With the year-end approaching, we had yet to meet our initial shipment goal and were ready to enter the new year with numerous lessons learnt and with revised approaches to tackling administrative and operational challenges.

We had received all the eggs expected for 2023, until news broke of a potential shipment in December. Right before our team departed for the holidays, we received confirmation of 21 viable eggs from Cairns Marine in Australia, which was greenlit for export. With a limited time window available for shipment, and the annual permit's expiration date fast approaching, we went into full swing to prepare for what would be our largest shipment to date.

In case the magnitude of this shipment is not obvious, these 21 eggs will single-handedly put both shark nurseries – RARCC nursery at Kri Island (North Raja Ampat) and Misool Foundation nursery at Batbitim Island (South Raja Ampat) at near full capacity. That's been a long-awaited event the

StAR Project coalition has been consistently working towards. All the eggs were generously donated by Cairns Marine, and are part of our first translocation from a healthy wild population to Indonesia. The eggs would arrive safely in their respective nurseries right before the new year.



Newly-arrived eggs from Cairns Marine acclimating well in their tanks at the RARCC nursery



Receiving the egg shipment at the cargo warehouse at the Jakarta airport



All smiles by the Indonesian team, comprising staff from Jakarta Aquarium and Safari, Konservasi Indonesia, Misool Foundation, and Thrive Conservation, after a long day processing the StAR Project's biggest egg shipment

FROM AUSTRALIA TO RAJA AMPAT

Those who have been closely following the developments of the StAR Project will know about the long journey each egg takes, from their aquarium origin to the nurseries in Raja Ampat, hatching, and finally being released into the wild.

Though the journey seems rather straightforward, a lot of planning and logistical coordination is required for every single shipment – be it for a single egg, or a shipment as large as 21 eggs! Throughout their long journeys, the shark eggs must pass through quarantine. During this process, they undergo a stopover where they receive a water change, which keeps the packaging water the eggs are in highly oxygenated throughout the duration of travel.

During their stopover in Jakarta, our local aquarium partner and certified quarantine facility, Jakarta Aquarium and Safari (JAQS) hosts the eggs for as long as needed before they are flown to Sorong. Their role in our shipments is crucial as the eggs need to be maintained and monitored until they receive approval for domestic travel. In a nutshell, JAQS' job as a quarantine facility can be summarized as follows: (1) Unpack the eggs and record water parameters, (2) Candle the eggs to monitor their condition, (3) Feed low-pressure water from the quarantine tanks into the travel bags, and (4) Move the eggs into their quarantine tanks once the water parameters in the travel bags and the tanks have stabilized.

The quarantine process for the 21 eggs was tedious but essential in ensuring all of them stayed alive and healthy. Our staff arrived at the facility around 10.30pm, and were greeted by the full JAQS team.

All hands were on deck as we unloaded the boxes from the cars and into their facility. It was full-on. Seeing the team's full effort, sparing not a single moment, their fast-paced movements were like clockwork. Every piece of equipment had been meticulously prepared, and every team member knew of their respective tasks. Their confidence allowed me to comfortably inspect each egg to ensure they were still alive and well. Water was flowing, parameters were recorded, bags were aerated, and before we knew it, the eggs were acclimated and in their aquarium tanks. With hours passing like minutes, all the eggs were finally safe within their designated quarantine tanks several hours past midnight. Time gradually slowed down and the weight on our shoulders lifted. We could sleep soundly that night knowing that the eggs were fine and dandy.

Little did we know that the coordinated handling of this shipment (the largest and least expected so far) would be a true reflection of the commitment and dedication that every single partner has in *resharking* Raja Ampat. Massive gratitude goes out to the Cairns Marine team in Australia for exporting the eggs despite having experienced a cyclone, as well as to the JAQS team for their immense support in serving as the intermediary for our long-traveled shark eggs!

We would also like to express our appreciation to BRIN, KKP, and BRIDA Provinsi Papua Barat for their support in ensuring the permits were renewed for 2023, making this shipment possible. Special thanks to MAC3 Impact Philanthropies, Ocean Blue Tree and AZA SAFE for their rapid response in agreeing to support the costs of the husbandry, permits and shipment of these eggs. As of 16 March 2024, all the eggs from this shipment have hatched.

VIABLE EGGS SHIPPED:

36




GEORGIA AQUARIUM

3

SHARK REEF
AQUARIUM
at mandalay bay

5

20

 RAJA
AMPAT
RESEARCH &
CONSERVATION
CENTRE

SEALIFE
Sydney

7

16

 misool
foundation

 cairnsmarine
Collection | Education | Research

21



STAR
project

SNAPSHOT

RAJA AMPAT · CAA 20 MARCH 2024



TOTAL SHARKS RELEASED:

05

CURRENTLY IN JUVENILE STAGE (PUP TANK):

19

CURRENTLY IN TRANSITIONAL STAGE (SEA PEN):

01

CURRENTLY IN EMBRYONIC STAGE:

04

UNHATCHED EGGS:

04

DEATHS:

03

Check out the **Population Viability Analysis** report for the StAR Project:





¹ Bee

² Jill

³ Luan

⁴ Seren

⁵ Dylan

⁶ Karen

⁷ James

⁸ Anselm

⁹ Camille

¹⁰ Fijubeca

¹¹ Christina

**MEET OUR NEWEST
ZEBRA SHARKS**

¹² Charlotte

¹³ Katrine

¹⁴ Claudio

¹⁵ Sayan

¹⁶ Dawn

¹⁷ Taran

¹⁸ Lydia

¹⁹ Kris

Aquarists Kyra Wicaksono (left) and Dady Alqadri (right) from Misool Foundation undergoing training at the Jakarta Aquarium and Safari

HERE'S HOW I BECAME A **SHARK NANNY**

Follow one aquarist's journey — from the cityscape of Jakarta to raising zebra sharks in Misool

by **KYRA WICAKSONO**
Misool Foundation



Kyra attending to the young zebra shark pups at the Misool Foundation nursery





For those who might be wondering about how I landed the coolest job in the world, a 'shark nanny', here's my story:

I grew up in the middle of Jakarta, the capital and most crowded city in Indonesia, with hardly any access to the ocean. Because of this, I have always been curious about what's out there. Binging wildlife documentaries on TV only fueled that curiosity. Wanting to see more of what nature had to offer became a growing passion, and that led me to apply to the Department of Biology at Universitas Indonesia.

A defining moment in my academic journey occurred during a marine ecology course. This course required me to do an underwater survey, while snorkeling, at Pulau Pari (north of Jakarta). Sadly, the poor water quality of the sea around Jakarta prevented me from actually witnessing any marine life. This prompted me to obtain a SCUBA diving license. This decision broadened my capabilities and deepened my commitment to preserving marine ecosystems. Long story short, after completing my studies, I joined the Misool Foundation in 2018 as an intern before becoming a research staff member the following year.

The initial introduction to the StAR Project came my way in November 2021, while I was doing a Baited Remote Underwater Video (BRUV) survey to assess shark and ray diversity within the Misool Marine Reserve. Knowing I had a particular interest and experience in shark and ray conservation, Kiki, the Dive Center Manager at Misool Resort and a good friend of mine, reached out to me about the project.

Kyra providing Mali supplemental food as she continues maturing in the sea pen



Dr. Jaya Ratha performs a mini-surgery to implant Mali's acoustic tag



After raising Mali for several months, Kyra finally releases her into the waters of the Misool Marine Reserve on 9 July 2023



At that point, the StAR Project was still in its infancy, and ReShark had not even been born. Kiki asked me if I'd be interested in taking on the role of Misool's 'shark nanny'. I remember thinking: "Well, that's gonna be the weirdest job title to put on a CV" but I was sold instantly. The prospect of being part of a groundbreaking shark repopulation initiative, the first-of-its-kind, felt like a tremendous privilege.

The next step was the month-long training at Jakarta Aquarium and Safari (JAQS) in March 2022, which brought together the first cohort of shark nannies for the StAR Project from both RARCC and Misool Foundation. JAQS developed a comprehensive curriculum, categorizing procedures into four main groups: husbandry, water quality, life support system (LSS), and veterinary.

The training aimed at endowing aquarists with a spectrum of skills, encompassing, but not confined to, observing zebra sharks and meeting their nutritional requirements, monitoring and ensuring an environment conducive to every stage of the sharks' life, mastering the intricacies of system installation and daily maintenance, employing safe shark handling techniques, and collecting essential biological samples. The goal was to cultivate a versatile skill set that transcended routine tasks, preparing the nannies for the diverse responsibilities demanded by the StAR Project. Certainly, the nannies play a crucial role in engaging with global partners and facilitating outreach programs for both international tourists and local communities. Therefore, possessing a proficient command of English is essential for effective communication.

Fast forward to our post-training era, we (a team comprising staff from Misool Resort and Thrive Conservation, and myself) built Misool Foundation's nursery in just eight days!

Following the construction, I visited the RARCC nursery up north for a month to receive further on-the-job training from Leah Neal (Georgia Aquarium) and Jack Jewell (Shark Reef Aquarium at Mandalay Bay) from the StAR Project Husbandry Working Group. We also welcomed our first delivery of eggs from SEA LIFE Sydney Aquarium and Shark Reef Aquarium at Mandalay Bay.

Oh, and the highlight? We nailed capturing our first zebra shark, Mali, hatching on tape — a total showstopper and also the fourth shark to be released and the first in the Misool Marine Reserve. After her release, we got busy downloading data from the 15 acoustic receivers around the area.

Reaching this point, I often can't help but think back about the good old days when my parents expressed much hesitancy about my decision to leave the comforts of home for Misool. Truth be told, I only informed them a week before departing. It's easier to seek forgiveness than ask for permission, right? After six years of getting used to seeing me in person only three times a year, they have become incredibly proud of all I've achieved. They even jokingly refer to themselves as 'shark grand-nannies'!

Where am I now? Still happily residing at Misool Resort, taking care of our latest and biggest batch of 10 eggs, donated by Cairns Marine in Australia.

Do note that I'm certainly not the sole 'shark nanny' on this journey. Presently, the StAR Project has a team of six incredible nannies: Shannon Latumahina, Dolly Tahalele, Maryrose Tapilatu, and Clara Amalia who are based at the RARCC nursery, and Agi Zalma stationed in Misool with me.

While the StAR Project offers a glimmer of hope for the zebra shark population in Raja Ampat, I am certain it will also take the nannies places. Julia Tapilatu, our former nanny at RARCC, is currently pursuing her master's degree at Texas A&M University in the US. She is researching the effect of water parameters on the growth of zebra shark pups in aquariums as compared to controlled nursery environments. As soon as I can, I too aspire to capitalize on opportunities for further advancement and deepen my knowledge in marine conservation.

Are you eager to join our team now? The StAR Project offers ongoing opportunities for Indonesian citizens. Visit our website at www.reshark.org/opportunities for more.

I would like to express my sincere appreciation to the StAR Project coalition. Special thanks to Prof. Charlie Heatubun and BRIDA Provinsi Papua Barat for their leadership of this groundbreaking project, as well as the National Research and Innovation Agency of the Republic of Indonesia (BRIN) and the Ministry of Marine Affairs and Fisheries (KKP) for their strong support in enabling the import of all of our precious zebra shark eggs, and of course to the aquariums for producing these eggs. My heartfelt gratitude also goes out to all our supporters for making the dream of *resharking* Raja Ampat a reality!



Mali exploring her pup tank under the watchful eyes of Misool Foundation aquarists Agi and Kyra, and Program Manager Nesha (left to right)

Candling helps the aquarists illuminate and monitor the shark embryo and its remaining yolk. On 11 March 2024, young Katrine emerged from Egg #20.

20

OTHER HAPPENINGS

The **ReShark Lodge** at RARCC has been completed and is ready to welcome its first guests.



CONTRIBUTE TO
LEOPARD SHARK RESEARCH
SUBMIT YOUR PHOTO



SCAN HERE:




Spot the Leopard Shark is a citizen science project (Stegostoma tigrinum), also known as tiger sharks. We are looking for information on their populations, behaviour and longevity. Submitting your leopard shark photos helps us understand this species. The data collected over time will be used to help protect the shark. For more information, visit www.spottheshark.org



Partnerships with **local communities in Raja Ampat** are being established to ensure a sustainable supply of feed for the sharks.





New positions for shark aquarists and StAR Project interns were recently launched, with applications underway.




CONTRIBUTE TO
LEOPARD SHARK RESEARCH
YOUR PHOTO

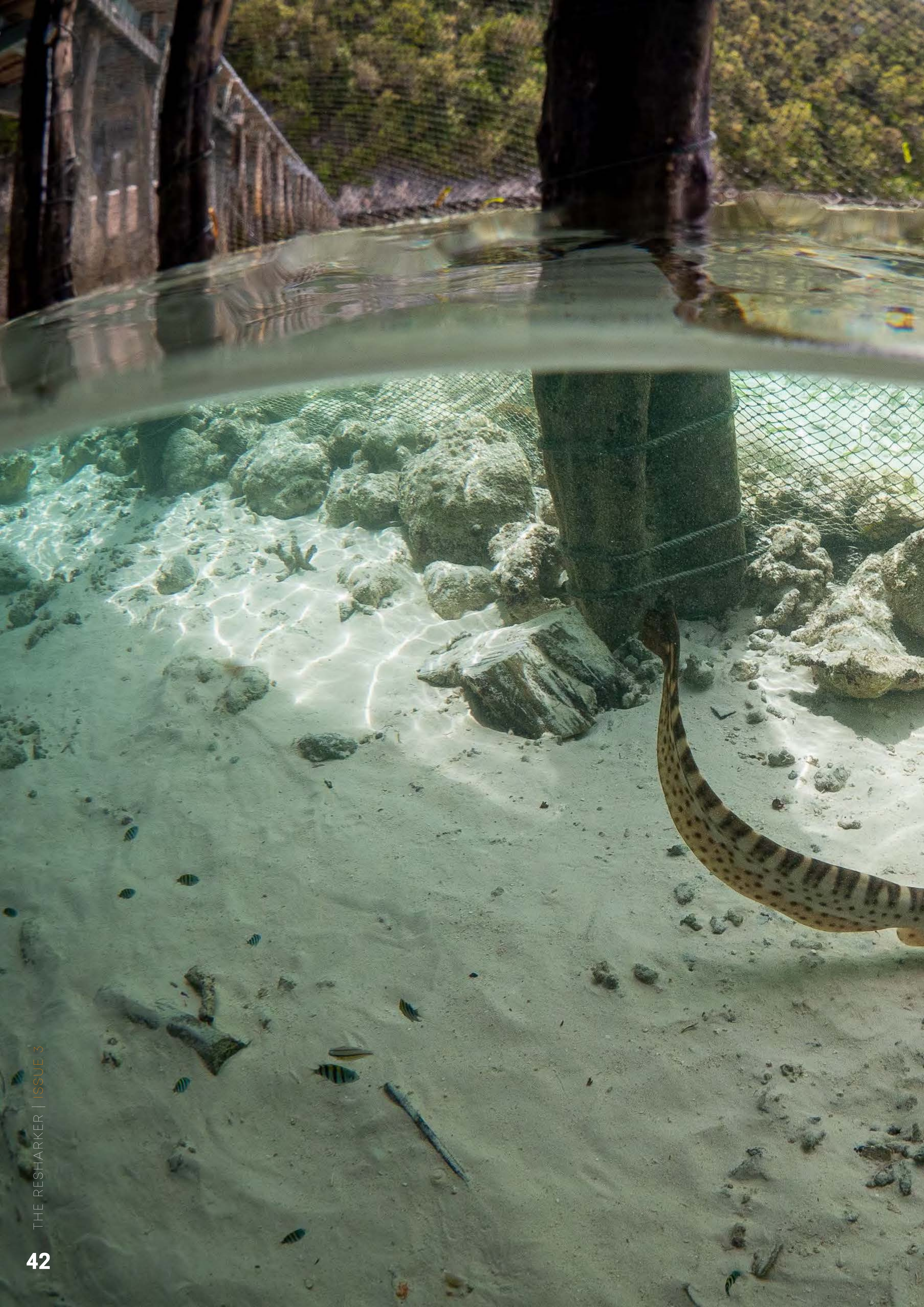
PHOTO TIP:
Most useful areas for ID are the left side and dorsal fin. Ensure these are captured clearly.

... science program that uses photo-ID of leopard sharks as zebra sharks, to assist scientists in investigating their ...
... os will help scientists understand more about this en...
... me will also contribute directly to its conservation. S...
... on how to take your photos and upload them to...

Spot The Leopard Shark
Is a citizen science initiative using photo submissions to identify leopard sharks. Check out their website:



Plans to **relocate the existing sea pen in Misool** are ongoing, with a blue hole at Kalig identified as a potential new site.



Marshal adapting to ocean currents, a sandy seabed and having to forage for her own food in the sea pen at RARCC. Check out her recent wild foraging behavior [here](#).



**Wilderness with
Simon Reeve** — Episode 3:
Coral Triangle, BBC iPlayer:



A deep dive into the
StAR Project in the
latest issue of
Shark News:



Dr. Christine Dudgeon
talks ReShark on the
latest episode of the
Ocean Lovin podcast:



#PradaReNylon video, in collaboration with National Geographic Creative Works, featuring scenes at our nursery:



Home / Conservation / Marine Life

How Captive Breeding is Helping Shark Conservation

In this edition of "organizations divers should know," Dr. David Shiffman introduces divers to ReShark

By [David Shiffman, Ph.D.](#) | Created On March 29, 2024

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Online feature story on Scuba Diving Magazine:



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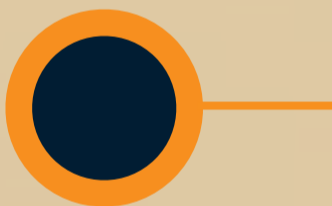
Atlantis Dubai
 IUCN SSC Shark Specialist Group



Okinawa Churaumi Aquarium



Ocean Park Hong Kong

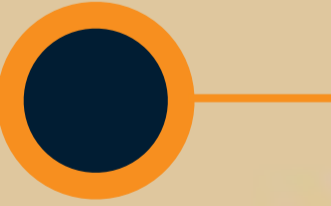


Kwame Nkrumah University Science and Technology

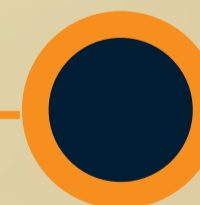
Badan Riset dan Inovasi Nasional (BRIN)
 Kementerian Kelautan dan Perikanan (KKP)
 Pemerintah Provinsi Papua Barat
 Pemerintah Provinsi Papua Barat Daya
 Badan Riset dan Inovasi Daerah (BRIDA) Provinsi Papua Barat
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OUR SUPPORTERS

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