



SPOT/SPLASH ANTIFOULING PROTOCOL

Micron is a copper-based, ablative antifouling paint that kills biofouling on contact. Because of its toxicity, you must be careful to avoid skin contact—on the animal and the painter.

This guide will walk you through the safe and effective application of antifouling paint to SPOT/SPLASH tags for optimal performance and longevity. Tags only need to be antifouled for certain climates. Please ask your Technical Sales Consultant for more information. Wildlife Computers leaves the decision to apply an antifoul coating entirely to the researcher's discretion, however, it is **strongly recommended** that tags be treated with some antifouling coating to ensure the best possible change of a successful deployment as **Wildlife Computers does not warrant against biofouling**.

The following instructions are based on recommendations from International Paints, the manufacturer of Micron paint.

About Micron Paint

Fouling organisms can be hugely detrimental to tagging studies. It is imperative that tags be protected against marine growth, especially in tropical waters. Wildlife Computers endorses Micron antifouling paint.

- Successfully used for decades on sea turtles and Wildlife Computers tags.
- Copper-based, ablative antifouling paint which kills biofouling on contact.
- Toxic—avoid skin contact for both the painter and the animal.

The application process involves one coat of [InterProtect® 2000E primer](#) and three coats of [Micron](#) on SPOT and SPLASH tags. See our [PAT tag antifouling protocol](#) for MiniPAT, microPAT, all sPAT tags, and mrPAT. We recommend Micron 66* or Micron CSC though other copper-based Micron paints will function well if applied properly.

Wildlife Computers offers an optional service to sand, mask, and paint tags with antifouling coatings before shipping for \$250 USD per tag. With this service, for non-buoyant and larger buoyant tags, the tag body is painted with one primer coat and three coats of Micron CSC while some sensors are coated in PropSpeed (which is a clear silicone coating and relies on water movement to remain effective). Stainless steel Wet/dry sensors** are also coated with a conductive polymer (C-Spray).

*Micron66 has been discontinued but can still be found in some stores. Wildlife Computers is testing Micron CSC as a replacement. MiniPAT, sPAT, Benthic sPAT, mrPAT, and microPAT pop-up tags will float with one coat of primer and two coats of Micron CSC. SPLASH and SPOT tags on other species such as sea turtles and sharks should be painted with one coat of primer and three coats of any Micron paint. Once antifouling paints and tethers are applied, Wildlife Computers recommends performing a float test. **Copper naturally possesses antifouling properties, so the Wet/Dry sensors—used in several of our turtle tag designs—are intentionally left uncoated with C-Spray.

SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Safety Information

You **MUST** read all the label and safety instructions before you start. You must **MUST** follow all the safety guidelines and wear the correct personal protective equipment. The following link will provide access to the safety datasheets for the Micron CSC antifouling paint: <https://www.interlux.com/us/en/products/micron-csc>.

Personal Protective Equipment (PPE)

- Disposable Gloves—nitrile gloves are recommended.
- Safety Goggles—tight-fitting goggles or face shields are recommended. Avoid wearing contact lenses.
- Protective Clothing—wear impervious clothing or overalls if skin contact is likely to occur.
- Apply in a well-ventilated work area.
- Respirator—suitable respiratory protection should be worn in a confined space or in case of inadequate ventilation. A respirator must be worn if an aerosol or mist will be generated.



The safety guidelines **MUST** be followed and the correct PPE **MUST** be worn for the application of any antifouling coating.

Things To Know Before You Paint

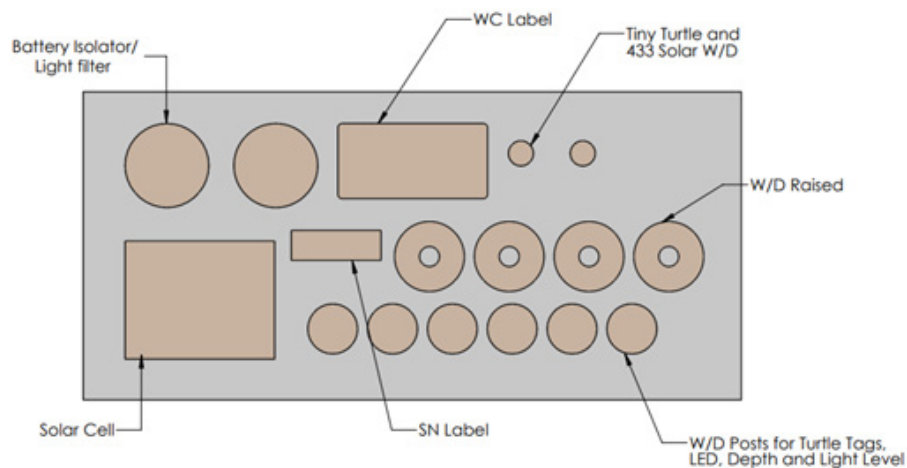
- Watch the videos: [Apply Prospeed](#) and [Apply Micron](#).
- Keep in mind that the entire antifouling process requires up to 48 hours to complete prior to the tags being attached to the animal.
- Paint the antennas with Prospeed!
- After masking off the wet/dry sensors, communications port, depth sensor, battery isolator screw, tag return and serial number labels, and LED viewing port* (communicate with the tag to determine LED location), you will then sand and prime the entire tag including the Fastloc GPS and Argos whip antennas.
- Prime 2-3 tags at a time to ensure the first coat of Micron goes on while the primer is still slightly sticky and not dry. This is determined after drying 10 minutes using the “thumb-print test” whereby, if you can leave a thumbprint in the primer without getting paint on your thumb, the primer is ready for overcoating. If the primer hardened and is no longer sticky, sand it back with 80 grit sandpaper and apply another coat of primer and start the process again.
- Mix the Micron with a battery drill or paint mixer tool—it is imperative to dislodge the copper off the bottom of the can. If you can’t use a drill, mix it thoroughly with a wide paddle to ensure all the copper is mixed into the paint.
- Apply three coats of Micron** with sufficient time between each coat—once the first coat dries (to the touch anywhere between 4-16 hours depending on temperature), you may paint the next coat.
- After the final coat has dried for at least two hours, remove all the masking tape.

*Sensors, antennas, and ports vary by tag. Please refer to your tag’s user manual. **Please refer to the [Antifouling a Pop-up Tag Guide for PAT tag application and considerations](#).

SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Equipment Required

- [InterProtect 2000E Primer](#)
- [Micron Antifouling Paint](#)
- [Propspeed Clear Coat](#)
- 500 ml of isopropyl alcohol or acetone
- Battery-powered drill and mixing tool or strong mixing sticks (for the paint)
- Appropriate respirator, fume cabinet, or well-ventilated work area
- Drying area to hang tags with “S” hooks or pegs
- Rags/paper towels
- Several pairs of disposable gloves
- 80-100 grit sandpaper
- One roll of masking tape and scissors
- Mixing cups or bowls
- Mixing sticks (tongue depressors)
- Two 50 ml syringes or 100 ml cups for measuring the primer, paint, and hardener
- Six small (~10 mm) disposable paint brushes for Micron and Propspeed
- Large Ziploc® or resealable zippered storage bags
- 3/8” (10 mm) and 1/4” (6 mm) hollow punches, hammer, and wooden/nylon board to punch out masking tape discs **OR**
- Antifouling sticker sheet (image below). Provided on request from Wildlife Computers.



Application Procedure

You can watch the step-by-step video for adding Micron paint to sea turtle tags here: <https://wildlifecomputers.com/turtle-tagging/>.



The entire process requires a minimum of 48 hours to be fully complete before the tags can be affixed to the animal. Proper planning and scheduling are essential to ensure the process is completed correctly.

SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Work Area Preparation

Lay out all the required equipment in a well-ventilated area. Create enough room to set the tags out to dry without them touching.

Tag Preparation

- Lightly sand the entire tag. When sanding tags, be extremely careful not to damage any external sensors such as the temperature sensor probe, if applicable.
 - Some tags come with Peel Ply to improve tag adhesion to the animal. **Keep Peel Ply on during sanding. Remove just prior to tag attachment.**
 - Tag surfaces that are in contact with an animal's skin **MUST** not be painted with Micron. **Therefore, finmount tag bottoms (e.g. the part of the tag that touches the dorsal fin of a shark) MUST not be sanded NOR painted with any kind of antifouling.**
- Clean the tag thoroughly with isopropyl alcohol or acetone. Only handle the tag with gloves once the tag is cleaned.
- Cover all the tag's critical areas with either the provided sticker sheet or with a non-soluble masking tape cut as close to the sensor shape as possible. These areas must be covered as painting them will hinder the tag's operation and greatly impede performance.
 - Critical areas are different depending on your tag type but may include the following: wet/dry sensors, tag return and serial number labels, communications port, depth and temperature sensors (for SPLASH tags), and LED viewing area (communicate with the tag to determine LED location), and light sensors (SPOT tags and Fastloc® turtle tags don't normally have light sensors).
 - On SPLASH tags mask a 10 mm (3/8") area above the light sensor, if applicable. Take care to wrap the external thermistor with masking tape.
 - Wipe the tag again with isopropyl alcohol or acetone being careful not to dislodge the masking tape.
- Insert the provided communication's connector plug and cover it with a piece of masking tape.

Primer Application and Drying Time

1. Stir or shake each can of base and hardener thoroughly.
2. Measure three-parts by volume of 2000E base and one-part per volume of 2001E hardener and mix completely.
3. Stir and allow it to rest for 20 minutes to pre-cure and allow the air bubbles to disperse.
4. Apply to the tag with a brush, painting all surfaces evenly—avoid drips and wet areas that will dry at different rates.

SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Drying times vary depending on temperature and humidity; however, 10 minutes is typical in warmer climates. It is critically important to apply the first coat of Micron while the primer is still slightly sticky. This is determined using a “thumb-print test.” “After the primer has dried for 10 minutes, use a gloved hand to touch the surface of the tag to see if it leaves a “print” on the paint. Withdrawing your hand, if the primer feels slightly sticky and leaves a “print” mark without leaving paint on the glove, it is ready to paint with Micron. [PASSES TEST]

- If the primer sticks to the glove, it needs to dry longer. [DOES NOT PASS TEST]
- If the primer is left too long and has cured hard, sand it back with 80 grit (grade) sandpaper and repeat the process to get a slightly sticky base. [DOES NOT PASS TEST]



It is critically important to apply the first coat of Micron while the primer is still slightly sticky.

Micron Application and Drying Time

1. Micron is a copper-based paint and must be mixed properly. As the primer dries, mix the can of Micron well using a drill with an attached paint stirring tool or strong mixing stick. Shaking the can is not effective as the copper settles to the bottom of the can.
2. After a successful “thumb-print test,” immediately brush a coat of Micron antifouling paint onto the entire tag.
3. The ideal drying time between coats as stated in the Drying/Overcoating Information section of the Technical Datasheet is below.
 - a. 4 hours at 41°F (5°C)
 - b. 4 hours at 50°F (10°C)
 - c. 2 hours at 77°F (25°C)
 - d. 1 hour at 95°F (35°C)
4. Apply the second coat of Micron and wait the appropriate time as stated.
5. Apply the third coat of Micron and wait the appropriate time as stated.



Full immersion (fully cured or fully dry) drying time as stated in the Drying/Overcoating Information section of the [Technical Datasheet](#) is 16 hours for all temperatures.

SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Masking Tape Removal

When the final coat has dried for 16 hours, use disposable gloves and remove the masking tape/stickers from any wet/dry sensors, pressure sensor openings, battery isolator screws, light sensors, LEDs, ground plates, etc. (these vary by tag type).

If the paint leaks under the masking tape, carefully clean the affected area with a rag and isopropyl alcohol or acetone.

Propspeed Application and Drying Time

Once the tape/stickers have been removed, you may apply Propspeed to the following sensors/areas:

- Light sensor(s)
- Wildlife Computers return label/serial number
- LED viewing port
- Antenna
- Customer label (if applicable)

Work with a small amount of Propspeed as it will dry out and gum up.

1. Spoon or use a syringe to put some Propspeed into a small cup.
2. Make sure the lid on the can is closed.
3. Apply Propspeed using the dabbing method. The dabbing method consists of the following:
 - a. Dip a brush into the Propspeed.
 - b. Dab the tip of the brush onto the tag by pushing the brush onto the surface, then lifting it off, and pushing it onto the surface again.
 - c. Repeat the process to cover the specific areas mentioned above, including the antennas, if applicable.
 - d. If your brush runs out of Propspeed, dip it again.
4. Wait overnight for the tag to fully dry.

[Learn more about Propspeed here.](#)

Tag Handling

Once dry, tags can be handled using disposable gloves. Store the tags in a cool place. A refrigerator is good but tags should not be stored with food.



Tags must be handled with gloves as Micron contains copper and biocides.

SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Float Testing

If you purchased a buoyant SPOT or SPLASH tag, once the final coating is dry and the tether is attached, you **MUST** perform a simple float test. It's likely this test will be more of a reassurance than anything, but since Micron adds more weight compared to other coatings (~.7 grams per coat on average), best practice is to perform a float test.

- The ideal float test is performed in sea water. If that is not possible, fill a bucket with fresh water, add the tags (including tethers), and ensure they float with the top wet/dry sensor clear of the water. Tags will be more buoyant in sea water, depending upon its salinity.
- Tethers can be wrapped around the tag or looped together, as the tag must support their weight during the test.
- Tethers may need to be shortened if the tags do not float with the top wet/dry sensor out of the water.

Tag Deployment

Once dried, the tags can be attached or tethered and deployed immediately. If you are not deploying right away, tags can be stored. See your tag's User Guide for storage instructions.

If more than 30 days have elapsed since the last coat of Micron was applied, use a soft nylon brush to lightly wash and reactivate the top layer.



Wildlife Computers SPOT and SPLASH tags should not be attached to sea turtles using epoxy over the top of the tag as this interferes with GPS antennas and antifouling paint. If attachment epoxy is tapered up the sides of the tags, then this, and the area of the epoxy footprint should also be painted with Micron after attachment. Ideally, it should be allowed to dry as long as possible.



SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Resources

International Paints Primer



Wildlife Computers recommends InterProtect 2000E primer. This primer is a two-part epoxy coating formulated to create an overlapping water barrier. This primer provides excellent adhesion to fiberglass, composite, metal, and wood. InterProtect 2000E is available in one-gallon or three-gallon sizes. If InterProtect primer is not available then “Primocon” or “Gelshield” primers can be used but they are not as effective.

Learn more: <https://www.interlux.com/en/us/boat-paint/primer/interprotect-2000e>

International Paints Micron Antifouling Paint

Micron is available in the USA and Asia-Pacific regions from International® paint dealers and ship handlers. Micron is not available in all countries. Similar Micron products such as Micron Extra, Micron Extra SPC, MicronCSC, Micron77, and Micron99 are alternative solutions although Micron66, Micron77 and Micron99 are the most effective. Micron77 may only be available from licensed applicators. Micron66 is for use in salt or brackish water and is only available in 1-gallon and 5-gallon cans.

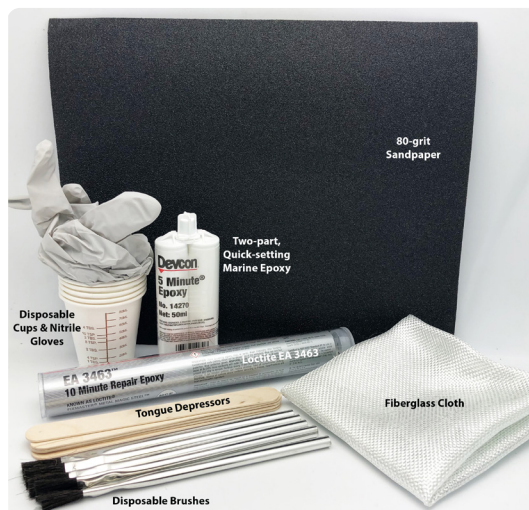
Learn more: <https://www.interlux.com/en/us/boat-paint/antifouling>

Store Locator: <https://www.interlux.com/en/us/paint-shops/stores-near-me#1,0,retailer,0,0,0,grid>



Wildlife Computers AZ-ATTCHKIT-000

Wildlife Computers AZ-ATTCHKIT-000 takes the guesswork out of gathering your turtle tagging supplies.



SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Appendix 1



We know companies change formulations so in November 2019 we initiated another round of antifouling testing. We looked at Micron66, Lightspeed, Propspeed, an unnamed competitive product, and a placebo. We painted the tags according to the manufacturer's recommendations and secured it to a floating wharf in Northland, New Zealand.

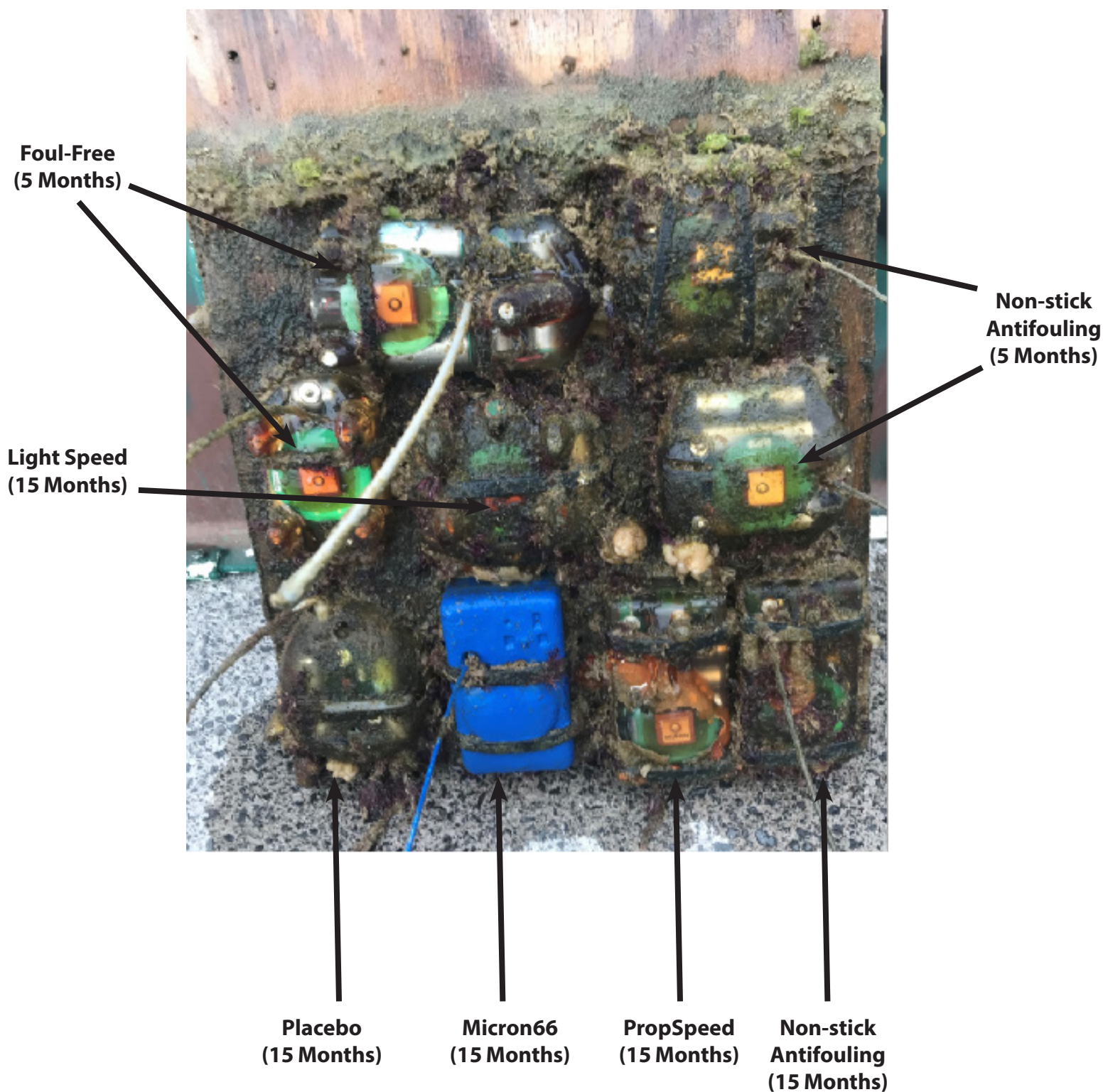
The blue tag, painted with Micron66, showed no evidence of fouling, with Propspeed coming in second. Micron66 has been used successfully for over two decades to limit biofouling on sea turtle satellite tracking tags.



SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Appendix 1—Continued

In August 2020, we added four additional tags. The tags were attached to the floating dock in a tidal channel in Whangaroa Harbour, New Zealand. The image was taken after a light hose wash to remove mud.



SPOT/SPLASH TAG ANTIFOULING PROTOCOL – CONTINUED

Contacting Wildlife Computers

U.S. and International

Members of the Wildlife Computers technical sales and support team are located in Redmond, WA, USA, and Havelock North, New Zealand, allowing us to cover promptly a wide range of time zones.

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WildlifeComputers.com

For Asian Clients

While we welcome your direct correspondence, we recommend that you contact our colleague, Yong Huang, for assistance. Mr. Huang understands the special purchase processes for your countries, and will provide you with the best service for the best price. He also is fluent in Japanese, Chinese, and English.

Mailing address—Please ship tags to our main office in Redmond, WA

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