

The equipment and methods used to comply with the EPBC Act Regulations

The Low Impact Minimally Percutaneous Electronic Transmitter tag (LIMPET) are commercially available from Wildlife Computers (Redmond, WA, USA), will be deployed on whales so that their movements can be tracked using the Service Argos system.

The LIMPET is a satellite transmitting tag widely used for tracking medium sized cetaceans (such as killer and minke whales) but can be deployed on larger whales if a short tracking period of approximately one month is desired. LIMPET will be deployed via modified version of the Air Rocket Transmitter System (ARTS, Restech) from a distance of 5 - 25m. The tag is positioned high on the body and often in line with or forward of the dorsal fin (according to target species type) which allows the transmitting aerial maximum time at the water's surface whilst minimizing the physiological response of the whale. The tag is designed to transmit for a period ranging from weeks to months. The tag will fail due to electronic malfunction, battery exhaustion or eventually tag rejection.

Currently, these tags are composed of two main parts: the anchoring system (or anchor) and the electronics package (or transmitter).

The 68 mm titanium anchoring system anchors the tag and does not penetrate past the blubber layer and the tag is prevented from penetrating deeper than the length of the darts by the transmitter itself. The anchoring system has a sharp, triangular-shaped tip and contains two rows of three, backward facing petals (six petals total) to act as anchors. These retention teeth passively deploy upon tag penetration.

The retention teeth on a purpose-designed projectile carrier grip to a metal ring fitted at the end of the tag allowing the tag to be fired from the air gun. When the tag makes contact with the whale, the rapid deceleration of the tag/projectile carrier withdraws the retention teeth releasing the projectile carrier. The metal ring then falls off in time to reduce the drag of the tag. The tag is sterilized with ethylene oxide prior to deployment.

Two types of transmitters are commercially available in this configuration: location-only and satellite-linked archival tags. Apart from small differences in size, the design of their housings is similar. The distal end of the transmitter is manufactured with a stopper which is connected to an aluminum ring to prevent the tag from penetrating too deeply into the body of the whale at deployment. The ring detaches after deployment to minimize drag at the exposed portion of the tag. The stopper prevents the inward migration of the tag.

The tag is constructed of titanium and high grade stainless steel which is almost completely inert in body tissues and is sterilized prior to deployment. The proportional size of the tag in relation to the size of the whale is several orders of magnitude less than tags used routinely on other marine predators such as seals, dugongs and sea birds.