

# New frontier in salmon tracking

*Helping to ensure sustainable fish populations in sensitive habitats worldwide...*

**W**hen scientists wanted a better way to monitor the movements of salmon populations, they naturally turned to the company that originated electronic animal identification.

In the 1980s, Digital Angel Corporation pioneered the development of miniaturised microchip technology for use in fisheries, companion animals and livestock.

Today, farmers and ranchers around the world use Digital Angel's electronic Radio Frequency Identification (RFID) products to collect and manage complex catalogues of data for livestock production, while companion animal owners use it to keep their pets safe. Similarly, RFID technology permits researchers to track millions of salmon migrating from fresh waters in the Columbia River Basin to the Pacific Ocean just as closely.

Tucked away inside these fish are tiny RFID transponders – each approximately the size of a grain of rice – allowing scientists to follow the salmon's movements throughout its life. Called Passive Integrated Transponder (PIT) technology, it's essentially the same as that used to electronically tag livestock; however, the process of tagging fish can be a bit more slippery.

## Detection in the blink of an eye

In the US project, up to 100,000 fish a day may receive a PIT tag. Placed safely into the fish's body cavity, each tag is programmed with one of 275 billion unique codes. Read the code and you've identified the individual fish that's carrying it.

Once tagged, fish are released into the wild to begin their migration to the Pacific. Along the way, fish are tracked as they travel through more than 400 detection sites. The last and largest is the Bonneville Lock and Dam near

Portland, Oregon. Here, the world's largest radio frequency identification antenna tracks the fish for the last time before they swim out to sea.

The dam's 17ft by 17ft antenna activates each passing tag and sends its identification number to a computerised database for processing and tracking all within 1/30th of a second.

How fast is that? Literally the blink of an eye – no easy feat, considering the fish are swimming past at 35mph.

When the mature salmon return to spawn five years later and once again pass through the detection sites, researchers are able to collect unprecedented variables of data designed to track the health of the salmon population and the world's oceans.

And it all starts with a microchip the size of a grain of rice. In humankind's efforts to preserve our natural resources, perhaps no technology so small has created a lasting impact so great.



**Tracking the health of the salmon population and the world's oceans starts with a microchip the size of a grain of rice developed by Digital Angel Corporation**



**A portion of the world's largest radio frequency identification (RFID) antenna is lowered into place at the Bonneville Lock and Dam near Portland, Oregon**

*Digital Angel Corporation is committed to preserving, sustaining, and enhancing our global food supply, one identification chip at a time.*



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