Let

$$
\begin{aligned}
&\mathit{fish} :: \mathit{Int} \to [\mathit{Permutation\ Int}]\\
&\mathit{fish}\ n = [\mathit{r1}\ n, \mathit{r2}\ n]\\
&\mathit{r1} :: \mathit{Int} \to \mathit{Permutation\ Int}\\
&\mathit{r1}\ n = p\ [[1\mathinner{\ldotp\ldotp} n]]\\
&\mathit{r2} :: \mathit{Int} \to \mathit{Permutation\ Int}\\
&\mathit{r2}\ n = p\ ([[2, (2 * n - 2), 4] +\!\!+ [(2 * n - 3), (2 * n - 4) \mathinner{\ldotp\ldotp} (n + 1)]])
\end{aligned}
$$

Note that this is a subset of S_{2*n-2}.
Let

$$
\begin{aligned}
&m\ n\ k \mid k < 0 = \mathbf{let}\ pk = -k\ \mathbf{in}\ ((\mathit{r1}\ n)\ \hat{}\!-pk) * ((\mathit{r2}\ n)\ \hat{}\!-pk) * (\mathit{r1}\ n) \uparrow pk * (\mathit{r2}\ n) \uparrow pk\\
&\quad \mid k \geqslant 0 = (\mathit{r1}\ n) \uparrow k * (\mathit{r2}\ n) \uparrow k * ((\mathit{r1}\ n)\ \hat{}\!-k) * ((\mathit{r2}\ n)\ \hat{}\!-k)
\end{aligned}
$$

Then we find that for any $n \geqslant 5$, we find that $m\ n\ (\pm 2)$ permutes 4 elements and has order 2. Further, for any $n \geqslant 6$, $m\ n\ (\pm 1, 3)$ permutes 6 elements and has order 3. It appears that for any $n \geqslant 4$, we have that $m\ n\ k$ has order 3 and permutes 6 elements if $k \neq \pm 2 \mod n$.

We find that the order of $fish\ 4 = 24$ and $\mathrm{ord}(fish\ 5) = 20160 = 4 * 7!$.

For Fish 5, we find that n_7 is gotten by

$$
\begin{aligned}
&a\ \text{`}\mathit{dv}\text{`}\ b = (b\ \text{`}\mathit{mod}\text{`}\ a) \equiv 0\\
&\mathit{n7} = [(a, b, c, d) \mid a \leftarrow [0\mathinner{\ldotp\ldotp}1], b \leftarrow [0\mathinner{\ldotp\ldotp}1], c \leftarrow [0\mathinner{\ldotp\ldotp}2], d \leftarrow [0\mathinner{\ldotp\ldotp}6]\\
&\quad , \mathbf{let}\ np = 7 \uparrow a * 5 \uparrow b * 3 \uparrow c * 2 \uparrow d\\
&\quad , np\ \text{`}\mathit{dv}\text{`}\ (5 * 3 \uparrow 2 * 2 \uparrow 6)\\
&\quad , np\ \text{`}\mathit{mod}\text{`}\ 7 \equiv 1]\\
&\mathit{n5} = [(a, b, c, d) \mid a \leftarrow [0\mathinner{\ldotp\ldotp}1], b \leftarrow [0\mathinner{\ldotp\ldotp}1], c \leftarrow [0\mathinner{\ldotp\ldotp}2], d \leftarrow [0\mathinner{\ldotp\ldotp}6]\\
&\quad , \mathbf{let}\ np = 7 \uparrow a * 5 \uparrow b * 3 \uparrow c * 2 \uparrow d, ((7 * 3 \uparrow 2 * 2 \uparrow 6)\ \text{`}\mathit{mod}\text{`}\ np) \equiv 0, np\ \text{`}\mathit{mod}\text{`}\ 5 \equiv 1]\\
&\mathit{n3} = [(a, b, c, d) \mid a \leftarrow [0\mathinner{\ldotp\ldotp}1], b \leftarrow [0\mathinner{\ldotp\ldotp}1], c \leftarrow [0\mathinner{\ldotp\ldotp}2], d \leftarrow [0\mathinner{\ldotp\ldotp}6]\\
&\quad , \mathbf{let}\ np = 7 \uparrow a * 5 \uparrow b * 3 \uparrow c * 2 \uparrow d, ((7 * 5 * 2 \uparrow 6)\ \text{`}\mathit{mod}\text{`}\ np) \equiv 0, np\ \text{`}\mathit{mod}\text{`}\ 3 \equiv 1]\\
&\mathit{n2} = [(a, b, c, d) \mid a \leftarrow [0\mathinner{\ldotp\ldotp}1], b \leftarrow [0\mathinner{\ldotp\ldotp}1], c \leftarrow [0\mathinner{\ldotp\ldotp}2], d \leftarrow [0\mathinner{\ldotp\ldotp}6]\\
&\quad , \mathbf{let}\ np = 7 \uparrow a * 5 \uparrow b * 3 \uparrow c * 2 \uparrow d, ((7 * 5 * 3 \uparrow 2)\ \text{`}\mathit{mod}\text{`}\ np) \equiv 0, np\ \text{`}\mathit{mod}\text{`}\ 2 \equiv 1]
\end{aligned}
$$

which gives $\mathit{n7}$ to be $[1, 8, 64, 36, 288, 15, 120, 960]$, $\mathit{n5} = [1, 16, 6, 96, 36, 576, 56, 21, 336, 126, 2016]$, $\mathit{n3} = [1, 4, 16, 64, 10, 40, 160, 7, 28, 112, 448, 70, 280, 1120]$, $\mathit{n2} = [1, 3, 9, 5, 15, 45, 7, 21, 63, 35, 105, 315]$