Known issues :: esoreflex and pipelines on macOS

Esoreflex and pipelines on macOS :: known issues
Because the ESO pipelines are managed on a yearly release cycle but MacPorts is subject to continuous evolution, it happens that some issues can arise during installation and or execution of the pipelines, usually because the pipeline software is not compatible with the newer versions of software packages provided by MacPorts.

Here we attempt to keep track of such issues, and provide workarounds where possible.

- **cext fails to build**
- **molecfit_third_party fails to build**
- **esoreflex :: general problems with GUI display**
- **matplotlib-3.7 :: molecfit GUIs crash** (fixed by 2023 Public Release)
- **matplotlib-3.6.2 :: giraf GUIs crash**

Public Release 2022

**Installing: cext fails to build [since release of Xcode 14.3]**
This is caused by a more strict handling of coding errors (what were previously warnings are now errors) by the latest version of the Apple's CLANG compiler (version 14.0.3).

Workaround:

```
sudo port selfupdate
sudo port upgrade outdated
cd /tmp
curl -O https://ftp.eso.org/pub/usg/esoreflex/fix_cext_1.2.4_9
sudo bash fix_cext_1.2.4_9
```

Then re-try installing whatever you were trying to install, e.g.:

```
sudo port install esopipe-xshoo-all
```

**Installing: molecfit_third_party fails to build [since release of Xcode 14.3]**
This is caused by a more strict handling of coding errors (what were previously warnings are now errors) by the latest version of the Apple's CLANG compiler (version 14.0.3).

Workaround:

```
sudo port selfupdate
sudo port upgrade outdated
```
sudo sed -i '' -e 's@FC=.\*\}@& CC=${configure.cc}@' /opt/local/var/macports/sources/ftp.eso.org/pub/dfs/pipelines/repositories/stable/macports/ports/science/molecfit_third_party/Portfile

Then re-try installing whatever you were trying to install, e.g.:
sudo port install esopipe-xshoo-all

**Runtime: general problems with GUI displays [for matplotlib version >= ~3.6]**
esoreflex seems to be becoming less and less compatible with each new version of the Python package matplotlib. The main problems are:

- the Interactive Navigation bar disappears
- the display and various "sizing and alignment problems" in the Recipe Parameters panel on the right side of GUI windows

see screenshots:

No matplotlib Navigation bar in the top left corner and no problems with the Recipe Parameter fields.
The matplotlib Navigation bar in the top left corner has been re-enabled and the Recipe Parameter fields in the right-hand side of the window are correctly (or at least better) presented.

While we work on a permanent fix for this, the following workarounds are available for MacPorts and install-script installations:

**MacPorts installations**

Execute the following commands:

```bash
cd /tmp
ver=$(port search esoreflex | grep ^esoreflex\ | awk '{print $2}' | sed -e 's%@%%')
curl https://ftp.eso.org/pub/usg/esoreflex/fix_esoreflex-${ver}.tgz | tar -zxvf -
cd fix_esoreflex-${ver}
sudo bash ./reinstall_esoreflex
```

**install-script installations**

Execute the following commands:

```bash
cd <esoreflex_install_dir>
cd esoreflex*
curl https://ftp.eso.org/pub/usg/esoreflex/fix_esoreflex.tgz | tar -zxvf -
bash
for P in fix_esoreflex/files/* ; do patch -p0 < $P ; done
```
where `<esoreflex_install_dir>` is the install subdirectory of the directory where you ran the `install_esoreflex` script.

**Runtime: Molecfit python GUIs crash [for matplotlib version >= 3.7] (fixed by 2023 Public Release)**

These errors are caused by the molecfit workflow python scripts in the public version of the molecfit package being not compatible with matplotlib versions >= 3.7, as provided by MacPorts.

This issue was fixed with the version 4.3.1 release fo the 2023 Public Release (May 2023).

In the meantime there are two possible work arounds until the next public release is made:

1. Install the Experimental Molecfit version, see the [MOLECFIT Experimental version](https://knowledgebase.eso.org) knowledgebase article.
2. Configure esoreflex to use an alternative version of python (3.9 or higher) that has a matplotlib version < 3.7 (e.g. 3.5), in this case see the [Using *conda to provide python dependencies for esoreflex](https://knowledgebase.eso.org) knowledgebase article.

**Runtime: giraf python GUIs crash [for matplotlib version > 3.6]**

These errors are caused by the molecfit workflow python scripts in the public version of the molecfit package being not compatible with matplotlib versions >= 3.6, as provided by MacPorts.

This will be fixed in the next public release, due in late May 2023.

Workaround:

In a terminal:

```bash
bash
cd /tmp
curl https://ftp.eso.org/pub/usg/giraf/fix_giraf-2.16.10--2.16.10.19.tgz | tar -zxf -
cd fix_giraf-2.16.10--2.16.10.19
```

For a MacPorts installation...
```
sudo bash fix_giraf-2.16.10--2.16.10.19
```

For non MacPorts...
```
bash fix_giraf-2.16.10--2.16.10.19 <esoreflex_install_dir>
```

**Tags**
- esoreflex
- install_esoreflex
- macOS
- MacPorts
software installation